Concept  Biosphere and Hydrosphere Interactions

## 1 Summary of Concept 1



# Earth's Systems

- Scientists divided the Earth into four main systems (spheres).

### 1 Biosphere:

- It is the system that includes all living organisms on Earth.

**Examples:**

- Humans
- Animals
- Plants
- Birds
- Fish
- Insects
- Microorganisms



The word "bio" means "life".

### 2 Atmosphere:

- It is the system that includes all the gases that surround the Earth.

**Examples:**

- Oxygen gas
- Carbon dioxide gas
- Water vapor
- Nitrogen gas



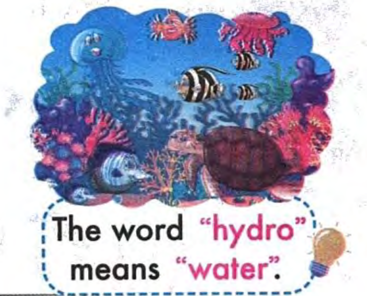
The word "atmos" means "vapor".

### 3 Hydrosphere:

- It is the system that includes all of the water on, under, and above the Earth.

**Examples:**

- Oceans
- Seas
- Rivers
- Groundwater
- Glaciers



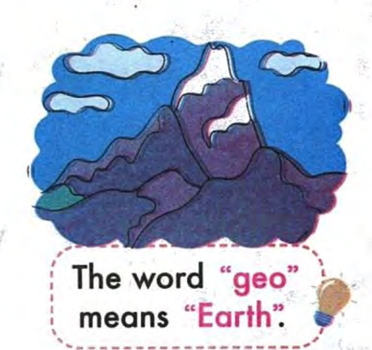
The word "hydro" means "water".

### 4 Geosphere:

- It is the system that includes rocks, sand, soil and minerals.

**Examples:**

- Rocks, sand, and soil on Earth
- Molten rocks and minerals inside Earth
- Landforms (mountains – canyons – valleys – dunes)



The word "geo" means "Earth".

# Biome

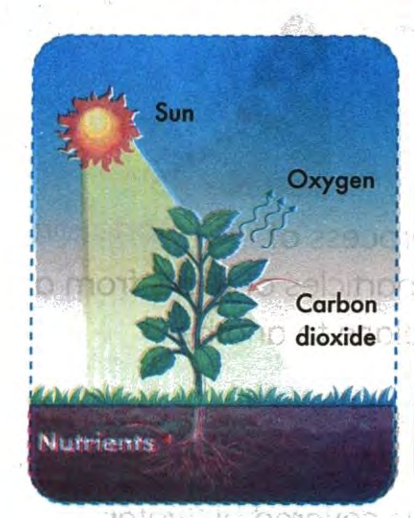



It is a large area of the world that has similar soil, climate, animals, and plants (wildlife).

**Examples:**

- Deserts
- Forests
- Rainforests
- Grasslands
- Wetlands

# Earth's Systems Interactions




### During Photosynthesis

**Geosphere interacting with atmosphere:**

Plants take in carbon dioxide from the air.

**Atmosphere interacting with geosphere:**

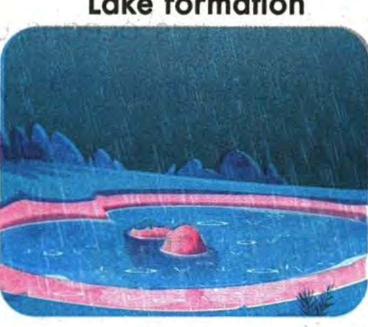
Plants take nutrients from the soil.

**Hydrosphere interacting with geosphere:**

Erosion of rocks by water



Lake formation



**Biosphere interacting with hydrosphere:**



# Uses of water

- Transportation
- Manufacturing
- Traveling
- Cleaning
- Bathing
- Recreation

# Water Impacts



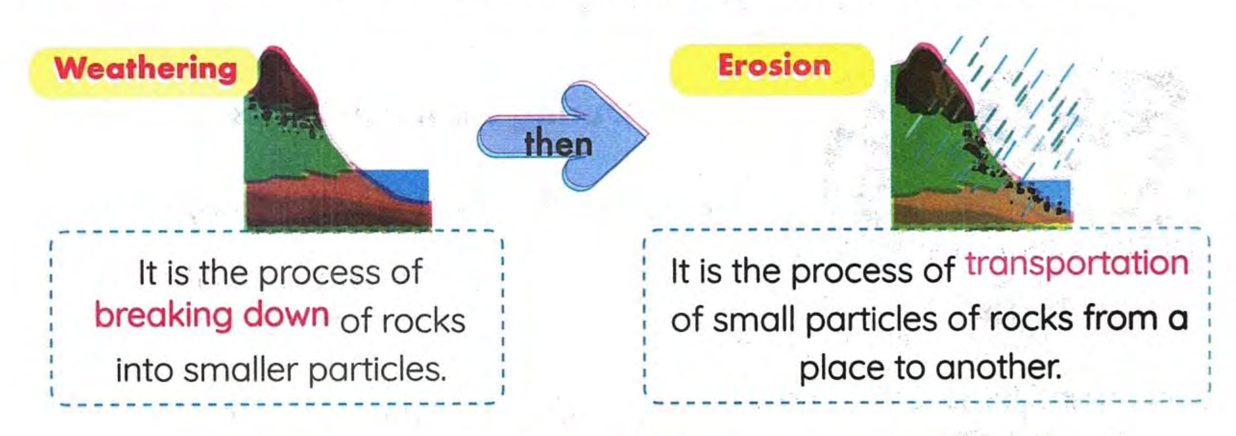


## 1 How do living organisms use water?

- All living organisms need water to drink, grow, and survive.

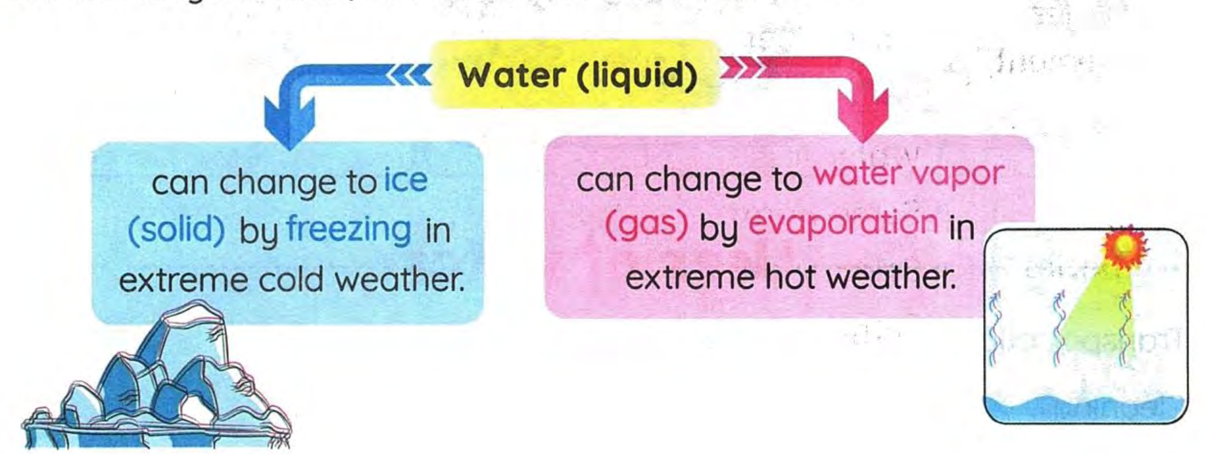
## 2 How does water affect nonliving things?

- Water has an impact on the Earth's surface through two processes:




## The Amount of Water on Earth

- Because nearly three-quarters (71%) of the Earth is covered by water.
- Salt water forms about 96.5% of the water on Earth.
- Fresh water forms 3.5% of the water on Earth.
- Water is everywhere, in lakes, rivers, seas, oceans, and underground.
- The total amount of water on Earth does not change, even if its state changes.
- We can recycle water, but we cannot make new water.

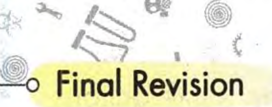


# Bodies of Water

| Body of Water | Definition |
|---|---|
| **Lake**<br>Most lakes contain fresh water<br>Some lakes contain salt water | It is a body of water that is surrounded by land. |
| **River** (Fresh water) | It is a body of water that flows from an area of **high altitude** to an area of **lower altitude** in a definite channel. |
| **Groundwater** (Fresh water) | It is the water that lies under the Earth's surface and has been absorbed into Earth through a layer of porous rocks. |
| **Oceans and Seas** (Salt water) | They are very large bodies of water that always contain salt water. |

# Species in Aquatic Ecosystems

| P.O.C | Ponds | Streams | Oceans and Seas |
|---|---|---|---|
| **Type of Water** | Fresh water | Fresh water | Salt water |
| **Water Movement** | Still water | Running water (Cool and flows fast) | Constantly moving in the form of waves |
| **Species** | • Water lilies<br>• Some worms<br>• Salamanders<br>• Frogs | • Catfish<br>• Crayfish | • Kelps<br>• Dolphins<br>• Starfish<br>• Flounder fish (Moses fish) |





# Aquatic Ecosystems

- Aquatic ecosystems include saltwater ecosystems and freshwater ecosystems.

## 1 Saltwater Ecosystems

### Shallow Areas

- These areas contain coral reefs and intertidal zones.

**• Intertidal Zone**

It is the area along the coast that disappears underwater at the high tide and appears at the low tide.

### Deep Areas

- These areas are called abyssal zones.

**• Abyssal Zones**

They are very deep areas in oceans where sunlight cannot reach them.

## 2 Freshwater Ecosystems

### Still Water (Ponds and Lakes)

- In many ponds and lakes, the water is present all year.
- Some other ponds and lakes dry up in the hot summer months.

### Flowing Water (Streams and rivers)

- Streams are small bodies of flowing water.
- Many different plants and animals live in moving water.

| Salt Lakes | Fresh Lakes |
| --- | --- |
| • Lake Bardawil in Egypt<br>• Lake Assal in Djibouti:<br>– It has high concentration of natural salts.<br>– Fish can't live in it.<br>– Few plants can grow there.<br>– Many bacteria live in it. | • Lake Nasser in Egypt |

## 2 Definitions of Concept 1

| | |
|---|---|
| **Earth** | It is the complex system that includes living organisms and nonliving things that interact with each other. |
| **Geosphere** | It is the system of the Earth that includes rocks, sand, and soil. |
| **Atmosphere** | It is the system that consists of a mixture of gases surrounding the Earth, such as oxygen, nitrogen, and carbon dioxide. |
| **Biosphere** | It's a system that includes all living organisms, such as microorganisms, plants, animals, and humans. |
| **Hydrosphere** | It's the system that includes all water on Earth. |
| **Weathering** | It's the breakdown of rocks into smaller particles. |
| **Erosion** | It is the process of transportation of small particles of rocks to another place by water or wind. |
| **Oceans and Seas** | They are very large bodies of water that contain salt water. |
| **Lake** | It is a body of water that is surrounded by land. |
| **River** | It is a body of water that contains fresh water and it always flows from a high-altitude area to a lower altitude one. |
| **Groundwater** | It is the water that lies beneath (under) the Earth's surface and is stored in the cracks and spaces between underground rocks. |
| **Biome** | It is a large area of the world that has similar soil, climate, animals, and plants (wildlife). |
| **Intertidal zone** | It is the area along the coast that disappears underwater at the high tide and appears at the low tide. |
| **Abyssal zones** | They are very deep and dark areas in oceans where sunlight cannot reach them. |
| **Salt water** | It is a type of water which forms about 96.5% of water on Earth. |
| **Fresh water** | It is a type of water which forms 3.5 % of water on Earth. |

# 3 Give Reasons for... Concept 1

1. Water is important for all living organisms.
   - Because living organisms need water to drink and grow, some animals and plants also live in water.
2. Water affects nonliving things, such as rocks.
   - Because water causes weathering and erosion of rocks.
3. Plants are among the renewable resources on Earth.
   - Because plants can be planted from seeds that grow up, they form new plants.
4. Our planet looks like a blue marble from the space.
   - Because nearly three-quarters of the Earth's surface is covered with water.
5. The total amount of water on Earth does not change.
   - Due to the occurrence of the water cycle, as water evaporates into water vapor in the air, it condensates in the form of clouds, and then falls in the form of rain.
6. Scientists name each of the four Earth's systems using the word "sphere".
   - Because the shape of Earth is very close to a sphere.
7. The absorption of nutrients from the soil by plants shows an interaction between two Earth's systems.
   - Because plants belong to the biosphere, and they absorb nutrients from the soil, which belongs to the geosphere.
8. Respiration process in humans is one of the examples for interactions between two Earth's systems.
   - Because humans belong to the biosphere, and they take oxygen and release carbon dioxide during respiration from the atmosphere.
9. Plants cannot grow in abyssal zones.
   - Because the abyssal zones are very deep, so sunlight can't reach them.
10. Sea water differs from ponds' water.
    - Because sea water is moving and salty water, while ponds' water is still and fresh water.




1. High tide occurs (concerning the intertidal zone)?
   - Intertidal zones will disappear.
2. Low tide occurs (concerning the intertidal zone)?
   - Intertidal zones will appear.
3. Plants are transferred to abyssal zones.
   - They will die due to the absence of sunlight.

# 5 Revision on Concept 1

## 1 Choose the correct answer:

1. All the following are components of the atmosphere, except ............ .
   a. oxygen b. nitrogen c. metals d. water vapor
2. Rocks are broken down into smaller particles during ............ process.
   a. photosynthesis b. weathering c. erosion d. respiration
3. The basic liquid matter that is necessary for humans, animals, and plants is ............ .
   a. milk b. water c. oil d. alcohol
4. Water covers nearly ............ of the Earth's surface.
   a. $\frac{1}{2}$ b. $\frac{3}{4}$ c. $\frac{1}{5}$ d. $\frac{1}{4}$
5. Water is used in all the following purposes, except ............ .
   a. recreation b. burning c. bathing d. manufacturing
6. ............ belong to the geosphere.
   a. Plants b. Rocks c. Gases d. Bodies of water
7. ............ is a body of water that is surrounded by land.
   a. A lake b. An estuary c. A river d. An ocean
8. Weathering of rocks by water represents an interaction between the ............ and the ............ systems.
   a. biosphere - hydrosphere b. hydrosphere - geosphere
   c. hydrosphere - atmosphere d. atmosphere - geosphere
9. Scientists classified the Earth into ............ spheres.
   a. three b. four c. two d. eight
10. All the following are the components of the hydrosphere, except ............ .
    a. rivers b. groundwater c. grass d. lakes
11. Coral reefs live in ............ .
    a. frozen water b. abyssal areas
    c. fresh water d. shallow areas

12. Crayfish can live in ........ .
    a. lakes  b. oceans  c. streams  d. ponds
13. All the following are resources of fresh water, except ........ .
    a. groundwater  b. rivers  c. seas  d. streams
14. Which of the following is considered an interaction between the biosphere and the atmosphere?
    a. Respiration of humans  b. Weathering of rocks
    c. Water cycle  d. Lake formation
15. Waterlilies grow in a body of wtaer whose water is ........ and ........ .
    a. still - salt  b. still - fresh
    c. running - fresh  d. running - salt
16. ........ contain(s) salt water.
    a. Lake Nasser  b. Nile River  c. Lake Assal  d. Streams
17. ........ are deep areas that sunlight can't reach them.
    a. Intertidal zones  b. Streams  c. Abyssal zones  d. Seashores
18. All the following species live in fresh water, except ........ .
    a. frogs  b. catfish  c. crayfish  d. starfish

## 2 Put (✓) or (✗):

1. A lake is land surrounded by water. ( )
2. Salamanders can survive in ponds because the water is fresh and fast. ( )
3. Streams are cold and slow-flowing bodies of water. ( )
4. Water on Earth is divided into fresh water and salt water. ( )
5. Scientists classify the Earth into three main systems. ( )
6. There are no living organisms can live in the hydrosphere. ( )
7. A river always flows from an area of low place to an area with higher place. ( )
8. Oceans and seas are large bodies of water that contain salt water. ( )

9. Fish in the sea represent an interaction between the biosphere and the hydrosphere. ( )
10. The salt concentration in Lake Bardawil is higher than in Lake Assal. ( )
11. Abyssal zones are darker than shallow areas. ( )
12. Kelps live in oceans, while water lilies live in ponds. ( )
13. The hydrosphere includes all water on Earth's surface only. ( )
14. Fresh water in rivers represents less than 3.5 % of all the water on Earth's surface. ( )

## 3 Write the scientific term:

1. It is one of the Earth's systems that includes gases that surround the Earth. (..................)
2. It is the system that includes humans, animals, and plants on Earth. (..................)
3. It is the Earth's system that contains mountains, rocks, soil, and sand. (..................)
4. It is the Earth's system that contains salt and fresh bodies of water. (..................)
5. It is a large body of water that contains salt water. (..................)
6. It is a zone along the coast that disappears underwater at high tide and appears during low tide. (..................)
7. It is a large area characterized by a specific climate and wildlife. (..................)
8. It is the type of water that forms about 96.5 % of the Earth's surface. (..................)
9. It is the process of breaking rocks into smaller particles by water or wind. (..................)
10. It is the process of transportation of weathered rocks from a place to another. (..................)
11. It is the water that lies beneath the Earth's surface. (..................)

## 4 Correct the underlined words:

1. The oxygen in the air is part of the geosphere (..................)
2. Some fish can live in Lake Assal. (..................)
3. Erosion by water is an interaction between the geosphere and the atmosphere. (..................)
4. When water freezes it changes into water vapor. (..................)
5. Rivers and most lakes contain salt water. (..................)
6. Rain water is part of the biosphere (..................)
7. Shallow areas are called abyssal zones. (..................)
8. Some ponds and lakes may dry up in the winter months. (..................)

## 5 Complete the following using the words between the brackets:

**A** (flounder fish - atmosphere - dolphins - hydrosphere - Frogs)

1. Both .................. and .................. live in a large saltwater ecosystem.
2. .................. live in ponds and this represents an interaction between the .................. and the biosphere.
3. There's is an interaction between the biosphere and the .................. when plants release oxygen gas.

**B** (summer - more - condensates - biosphere - hydrosphere - evaporates - less)

1. There is .................. fresh water than salt water on Earth.
2. Lake formation is an example of the interaction between the geosphere and the .................. .
3. Living organisms that live in some lakes may suffer in the .................. months.
4. When a hawk eats a snake, this represents an interaction in the .................. system.
5. In the water cycle, water .................., then .................. to fall in the form of rain.

## 6 Cross out the odd word:

1. Hydrosphere – Biosphere – Atmosphere – Erosion (............)
2. Sand – Human – Rocks – Mountains (............)
3. Oxygen – Rocks – Carbon dioxide – Nitrogen (............)
4. Deserts – Grassland – Rainforests – Space (............)
5. Red Sea – Lake Assal – Nile River – Lake Bardawel (............)
6. Water lilies – Salamanders – Frogs – Kelps (............)

## 7 Choose from column (A) what suits it in column (B):

**A**

| Column (A) | Column (B) |
|---|---|
| 1 The mixture of gases | a. belong to the hydrosphere. |
| 2 Salt water and fresh water | b. are components of the geosphere. |
| 3 People, animals, and plants | c. is considered as the atmosphere |
| 4 Molten rocks | d. belong to the biosphere. |

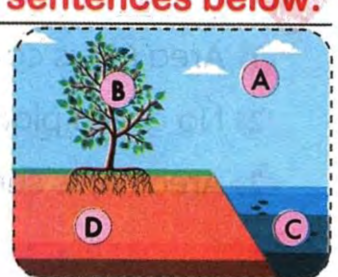
1 ............ 2 ............ 3 ............ 4 ............

**B**

| Column (A) | Column (B) |
|---|---|
| 1 The word "geo" refers to | a. water. |
| 2 The word "hydro" refers to | b. Earth. |
| 3 The word "atmo" refers to | c. life. |
| 4 The word "bio" refers to | d. vapor. |

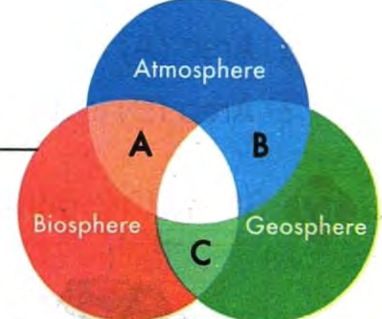
1 ............ 2 ............ 3 ............ 4 ............

## 8 Study the following figure, then complete the sentences below:



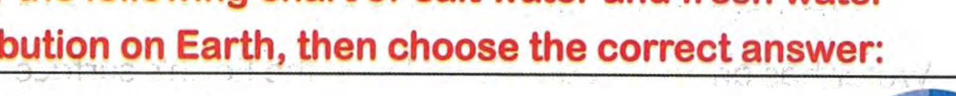

1. Letter (............) represents the geosphere.
2. Letter (............) represents the biosphere.
3. Letter (............) represents the atmosphere.
4. Letter (............) represents the hydrosphere.

## 9 Study the following figure, then answer the questions below:



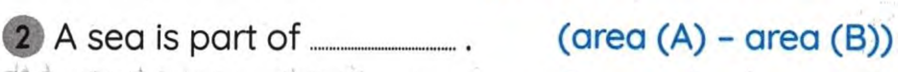

Put (✓) in front of the area that shows the interaction between the Earth's spheres:

| | Area "A" | Area "B" | Area "C" |
|---|---|---|---|
| 1 A rabbit digs a burrow in the soil. | | | |
| 2 A volcano erupts and emits carbon dioxide into the air. | | | |
| 3 A bean plant releases oxygen gas in the photosynthesis process. | | | |
| 4 A giraffe breathes in oxygen gas. | | | |



## 10 Study the following chart of salt water and fresh water distribution on Earth, then choose the correct answer:

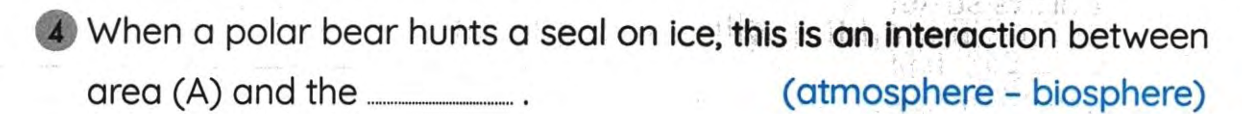
1. Area (A) represents ............................ . (fresh water - salt water)



2. A sea is part of ............................ . (area (A) - area (B))



3. Both areas (A) and (B) belong to the .............. .(geosphere - hydrosphere)



4. When a polar bear hunts a seal on ice, this is an interaction between area (A) and the ............................ . (atmosphere - biosphere)

## 11 Study the following figure of an ocean, then put (✓) or (✗):

1. Area (A) is called the abyssal zone. ( )
2. No green plants can survive in area (B). ( )
3. Area (A) is submerged with water at low tides. ( )
4. Area (B) doesn't receive any sunlight. ( )
5. Area (A) is warmer than area (B). ( )
6. Area (B) is a shallow area. ( )

A
B

## 12 Study the following figures, then complete the sentences below:

| Figure (A) | Figure (B) | Figure (C) | Figure (D) |
|---|---|---|---|

1. Figure (..........) is a plant that can survive only in still water.
2. Figure (..........) can survive only in running water.
3. Figure (..........) is an animal that can survive in ponds.
4. Figure (..........) is found in the Pacific Ocean.
5. Figures (..........) and (..........) are found in the same habitat.

## 13 Give reasons for:

1. Water has an impact on the rocks on the Earth's surface.

..........................................................................................

..........................................................................................

2. Human respiration is considered an interaction between two of the Earth's systems.

..........................................................................................

..........................................................................................

3. Most of the water on Earth can't be used for drinking.

....................................................................................................

....................................................................................................

4. Both the hydrosphere and atmosphere are important for plants to make their food.

....................................................................................................

....................................................................................................

5. No plants can grow in abyssal zones.

....................................................................................................

....................................................................................................

6. There are no aquatic organisms that can survive in Lake Assal.

....................................................................................................

....................................................................................................

7. Frogs and catfish can't live in the same habitat.

....................................................................................................

....................................................................................................

## 14 What happens if:

1. The hydrosphere on Earth is absent?

....................................................................................................

....................................................................................................

2. Some catfish are transferred from a stream to a salty lake?

....................................................................................................

....................................................................................................

# Concept 2 Water as a Valuable Natural Resource

## 1 Summary of Concept 2

- There are many natural resources on Earth, such as water, plants, and metals.
- Most of the water on Earth is salt water.
- We must conserve fresh water and protect it from pollution.

## Sources of Water

| Salt water | Fresh water | | Mixture of salt and fresh water |
|---|---|---|---|
| • Oceans<br>• Seas<br>• Some lakes | • Rivers<br>• Glaciers<br>• Wetlands | • Streams<br>• Groundwater<br>• Most lakes | • Estuary |

## Uses of Water

In Egypt, water can be used in many purposes, such as:

- Generating electricity (in Aswan High Dam)
- Agriculture

Around the world, many people work on the water by:

- Fishing
- Transporting goods

## Risks that threaten fresh water

### 1 Scarcity of fresh water



The scarcity of fresh water threatens the life of living beings.

### 2 Poor quality of fresh water

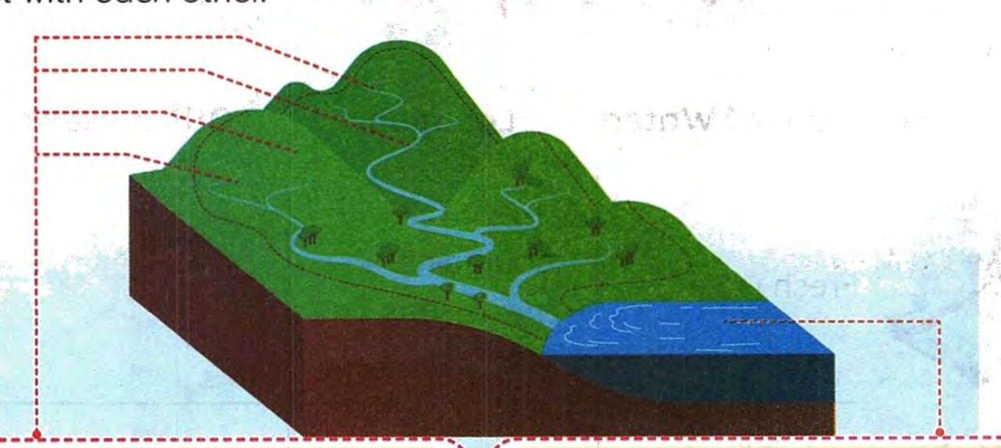


The poor quality of fresh water leads to the death or extinction of some living organisms.

# Bodies of Water

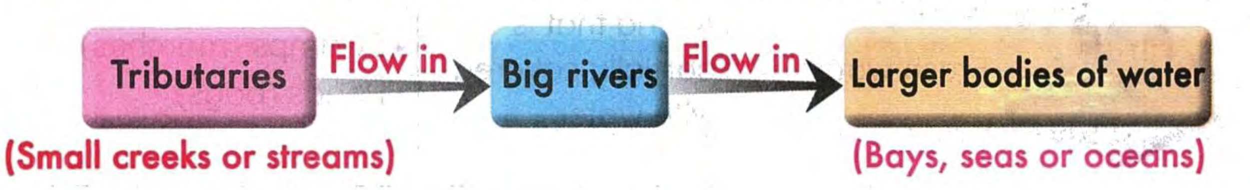
| Body of Water | Type of Water | Location | Other Information |
|---|---|---|---|
| Rivers | Fresh water | • Start in: mountains.<br>• End in: seas, or larger rivers. | |
| Lakes | • Most have fresh water.<br>• Some have salt water. | When water is collected in low-lying areas. | A lake is a body of water surrounded by land. |
| Wetlands | Fresh water | A land that is partially covered with water | • Swamps (marches)<br>• Ponds (bogs) |
| Estuaries | A mixture of fresh water and salt water | Where a river meets the ocean or sea | Estuaries are homes to thousands of plants and animals. |
| Groundwater | Fresh water | It is the water stored in the cracks and spaces of underground rocks. | |
| Oceans | Salt water | They are large water bodies that surround the continents. | • All oceans are connected to each other.<br>• The ocean's floor has mountains, plains, and plateaus. |

- Watershed maps can help scientists understand how bodies of water interact with each other.

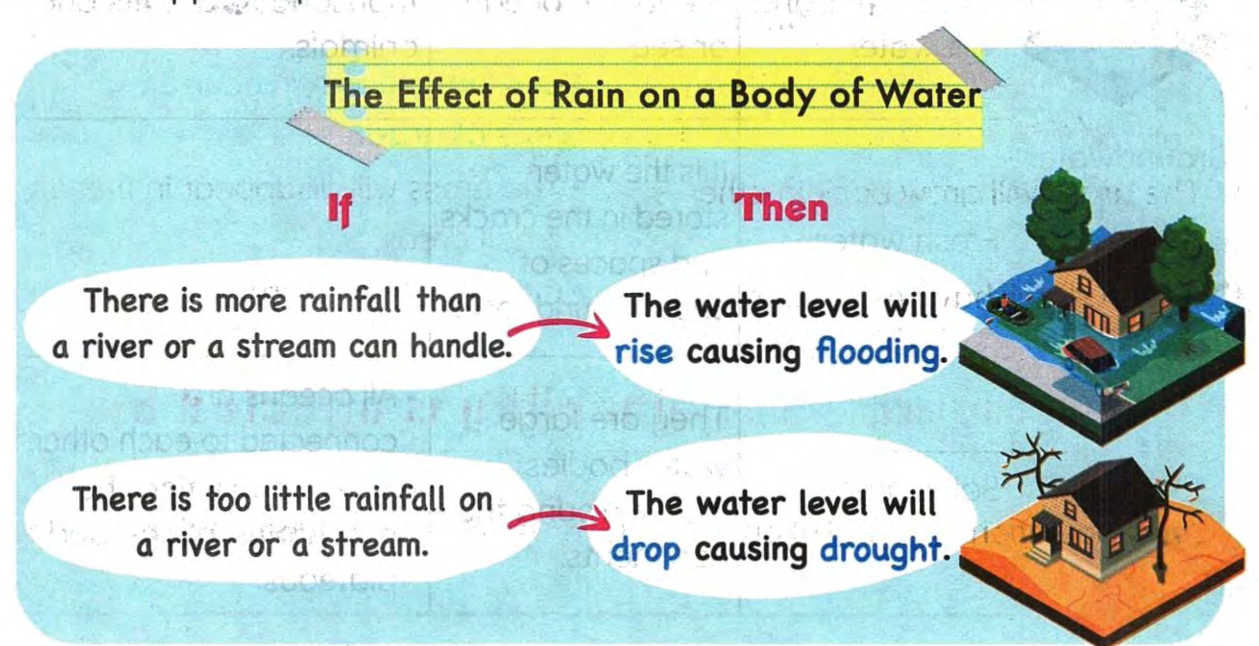


**Tributaries:**
They are small bodies of water, such as small creeks or streams, that flow into larger rivers.

**Watershed:**
It is an area of land where all the water from different sources flows towards a common location.




- Rivers start **upstream** and end **downstream**.
- What happens upstream will affect the bodies of water downstream.





## 1 Preservation of resources

- It means restricting access to or use of natural resources.

## Examples of Resources Preservation

1. **Ras Mohammed Protectorate** (In South Sinai)
2. **Wadi Al-Hitan Protectorate** (In Fayom)

## Examples of Harvesting (Depleting) Resources

1. **Overfishing**
2. **Overusing groundwater**



## 2 Sustainability

- It means using resources in a way that does not negatively affect the future supply of these resources.



### Sustainable Situation

Cows are placed in one large area of grass.

- The grass will grow back in other areas.
- Cows will still have more food.



### Unsustainable Situation

**Cows are placed in many small areas of grass.**

- The grass will disappear in these small areas.
- Cows will be hungry.

## The resources sustainability is affected by:

- Overpopulation
- Pollution
- Overusing of resources
- Unequal distribution of resources

# Recycling Water




- Solar energy **drives the water** cycle in nature.
- Humans can **recycle wastewater** and reuse it in many purposes.

## Wastewater:

It is the water **that has already** been used in homes and different industries.

## Recycling water:

It's the process **of removing** waste materials from water.

## Wastewater engineers

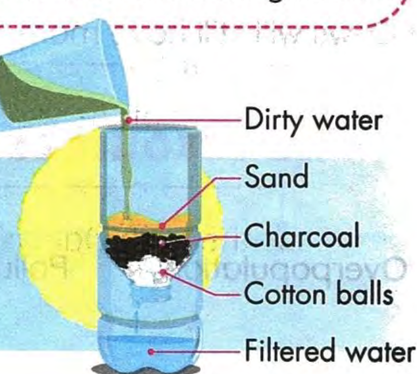
- They are **special kinds of** scientists that work in water treatment plants, such as **Bahr Al-Baqar** wastewater treatment plant in Egypt.

## The role of wastewater engineers in recycling wastewater:

1. They **decide where to build** water treatment facilities.
2. They **observe and check** each step in the process.
3. They check **the water quality** and the amount of pollutants in the water.
4. They **test the treated water** to make sure it is safe to use.
5. They **design ways to protect** a community from floods.
6. They **calculate the amount** of drinking water that the community needs.

## Filter model:

It helps us **remove harmful materials** from the polluted water.



## 2 Definitions of Concept 2

| | |
|---|---|
| **Water** | It is the basic liquid matter that all living organisms need to survive. |
| **Watershed** | It is an area of land where all the water from different sources flow towards a common location. |
| **Tributaries** | They are small bodies of water, such as small creeks or streams that flow into a bigger river. |
| **Wetland** | It is a land area that is partially covered with water. |
| **Dam** | It is a building established across a river to control the flow of water. |
| **Preservation** | It means restricting access to or use of natural resources. |
| **Sustainability** | It means using resources in a way that does not negatively affect the future supply of these resources. |
| **Wastewater** | It is the water that has already been used in homes and different industries. |
| **Wastewater engineers** | They are scientists who work in water treatment plants. |
| **Recycling water** | It's the process of removing waste materials from water. |

## 3 Give Reasons for... Concept 2

1. **Most of the water existing in the Earth's hydrosphere is undrinkable.**
   - Because most of the water on the Earth's surface is salt water.

2. **Aswan High Dam has a great importance for Egyptians.**
   - Because the High Dam is used to generate electricity.

3. **We should conserve fresh water.**
   - Because all living organisms need fresh water to survive.

4. It is preferable to turn off the faucet while brushing your teeth.
   - Because this helps in conserving water.

5. Water in an estuary is a mixture of salt water and fresh water.
   - Because it is formed when the fresh water of a river meets the salt water of an ocean or a sea.

6. The poor quality of water has a dangerous effect on all living organisms.
   - Because the poor quality of water leads to:
     Death or extinction of some living organisms.

7. Watershed maps are important.
   - Because watershed maps help scientists understand how bodies of water interact with each other.

8. Farms near a river may cause water pollution.
   - Because the waste will be carried by the river to downstream areas.

9. There are many things which affect the sustainability of resources.
   - Because resources sustainability is affected by overpopulation, pollution or unequal distribution of resources.

10. Placing cows in a big area of grass is a sustainable situation.
    - Because the grass will grow back in other areas, so the cows will still have more food.

11. Placing cows in many small areas of grass is an unsustainable situation.
    - Because the cows will eat all the grass before the new grass grows back, which causes the grass to disappear in these areas; the cows will starve.

12. Protected areas are established in some places.
    - To protect natural resources from being harvested.

13. Humans create many methods to recycle waste water.
    - To reuse water for many purposes.

14. Wastewater engineers test the treated water before the water is released in rivers.
    - To make sure that the water is safe.

## 4 What Happens if...? Concept 2

**1** The water of a river meets the water of a sea?

- An estuary is formed.

**2** We don't conserve fresh water?

- We can't find fresh water to drink.

**3** Water is collected in a low-lying area?

- A lake may be formed.

**4** There is rainfall more than a river can handle?

- The water level will rise causing flooding.

**5** The rate of rainfall on a river is too little?

- The water level will drop causing drought.

**6** A factory is established near the upstream of a river (concerning the downstream of the river)?

- The waste of the factory will be carried by the water to downstream areas.

**7** A factory is established near the downstream of a river (concerning the upstream of the river)?

- The upstream area will not be affected by the waste of the factory.

**8** People use water from wells at a faster rate than it is replaced by rain?

- The water of wells may dry up.

**9** Trees are cut down at a faster rate to get wood for cooking?

- It may lead to deforestation.

**10** Cows are placed in a big area of grass?

- The grass will grow back in other areas, so the cows will still have enough food.

**11** Dirty water passes through a filter water model?

- The filter will remove most dirt from the polluted water.





# 5 Revision on Concept 2

## 1 Choose the correct answer:

1. ........ are formed when water is collected in low-lying areas.
   a. Estuaries b. Oceans c. Lakes d. Rivers
2. ........ is formed when the water of a river meets the water of a sea.
   a. An estuary b. A lake c. An ocean d. A wetland
3. The amount of salt water on Earth is ........ the amount of fresh water.
   a. larger than b. smaller than c. equal to d. half
4. ........ include both swamps and ponds.
   a. Seas b. Rivers c. Lakes d. Wetlands
5. The ........ of fresh water may cause the extinction of some amphibians.
   a. conservation b. poor quality c. preservation d. high quality
6. When a stream receives too little rainfall, ........ may occur to this stream.
   a. drought b. flooding c. pollution d. overflowing
7. The area of land where water flows towards a common location is called a/an ........ .
   a. wetland b. watershed c. lake d. estuary
8. All of the following cause water pollution except the existence of a ........ across a river.
   a. dam b. factory
   c. farm d. trash dump
9. Small ........ and ........ are examples of river tributaries.
   a. bays - creeks b. creeks - oceans
   c. seas - streams d. streams - creeks
10. The water of a small creek flows into ........ .
    a. an ocean b. a bigger river c. a smaller stream d. a sea
11. The small bodies of water that flow into a bigger river are called ........ .
    a. estuaries b. tributaries c. watersheds d. bays

12 .................. of resources requires managing their usage methods.
a. Depletion b. Sustainability c. Renewability d. Scarcity

13 Wadi Al-Hitan Protectorate is an example of the ......... of natural resources.
a. sustainability b. depletion c. quality d. preservation

14 All the following are renewable resources, except .................. .
a. plants b. animals c. coal d. a and b

15 Plastic spoons are made from products of .................. .
a. oil b. trees c. animals d. paper

16 .................. of natural resources means restricting access to or using these resources.
a. Restoration b. Pollution c. Preservation d. Sustainability

17 .................. isn't an item used to make a model of a water filter.
a. Cotton b. Sand c. Charcoal d. Oil

18 All of these can be removed by a simple water filter, except .................. .
a. mud b. rock pieces c. salt d. dirt

19 Humans can .................. waste water to recycle it and use it again.
a. filter b. boil c. freeze d. conserve

## 2 Put (✓) or (✗):

1 Oceans are connected together and surround all continents. ( )

2 A lake is a body of water that is surrounded by land. ( )

3 The ocean's floor may have mountains, plains, and plateaus. ( )

4 Extinction of the frogs may happen due to the limited amount of salt water on Earth. ( )

5 Conservation and poor quality are from the concerns that threat fresh water on Earth. ( )

6 Resources of fresh water on Earth are unlimited. ( )

7 Water can flow from a bigger river to a tributary. ( )

8 What happens in tributaries affects what happens in upstream bodies of water. ( )

9. The water of a small stream flows directly into an ocean. ( )
10. Clothes can be made from the cotton or wool of the sheep. ( )
11. It is forbidden to hunt fish in Ras Mohammed Protectorate. ( )
12. Wadi Al-Hitan is an example of harvesting natural resources. ( )
13. Polluting water will not affect its future supply. ( )
14. Unequal distribution of resources leads to the unsustainability of resources. ( )
15. When cows are placed in many small areas of grass, the grass will disappear. ( )
16. Burning fossil fuels causes soil pollution that causes the survival of plants and animals. ( )
17. Fresh water is a limited nonrenewable natural resource. ( )
18. Humans can't recycle waste water to reuse it. ( )
19. Overpopulation doesn't affect the resources sustainability. ( )
20. In a water filter model, the water passes first on the sand, then on the cotton balls, and then on the charcoal. ( )
21. Wastewater is water that has already been recycled and filtered. ( )

## 3 Write the scientific term:

1. It is the water stored in the cracks among rocks that lie beneath the Earth's surface. (..................)
2. It is a land which is partially covered with water. (..................)
3. It is a body of water that has a mixture of salt water and fresh water. (..................)
4. They are large bodies of water that surround all continents. (..................)
5. It is a structure built on a river to control and conserve water. (..................)
6. They are maps used to know the direction of the flow of water. (..................)
7. It is a way of restricting access to or use of resources. (..................)

8. It is using resources in a way that does not negatively affect the future supply of them. (..................)
9. It is a human activity that leads to decreasing the number of fish. (..................)
10. It is the process of removing harmful materials from water. (..................)
11. It is the water that has already been used in homes. (..................)

## 4 Correct the underlined words:

1. The Africa Continent is surrounded by **rivers**. (..................)
2. You should **increase** the time of taking a shower. (..................)
3. Humans control and conserve water by building **water turbines**. (..................)
4. Heavy rainfall makes the water level **drop**, causing flooding. (..................)
5. Water **balance** causes drought or flooding. (..................)
6. About 10% of the world's animal species live only in **saltwater** habitats. (..................)
7. In a water filter model, water passes first through **charcoal**. (..................)

## 5 Complete the following using the words between the brackets:

**A** (more than – electricity – lakes – ecosystems – fresh water)

1. We must take a quick shower to conserve .................. .
2. Most .................. contain fresh water.
3. In the High Dam, water is used to generate .................. .
4. There is an amount of groundwater on Earth .................. the water in rivers and lakes.
5. Estuaries are .................. to thousands of plants and animals.

**B** (tributary – death – dam – factory – upstream – wind)

1. The poor quality of water leads to the extinction of some organisms or causes the .................. of others.

2. What happens .................. will affect downstream bodies of water.
3. The litter of a trash dump near a .................. is blown by .................. to other bodies of water connected to it.
4. Building a .................. near a tributary affects the water quality downstream, while building a .................. affects the water level downstream.

**C** (undrinkable – wastewater engineers – preservation – dry up – Water filters)

1. Restricting access to consume resources in Ras Mohammed Protectorate is called .................. .
2. When fresh water is used, it becomes .................. .
3. If people in Siwa overuse the groundwater, the wells may .................. .
4. .................. remove harmful materials from waste water.
5. The scientists that work at wastewater treatment plants are called .................. .

## 6 Cross out the odd word:

1. Glaciers – Oceans – Streams – Rivers (..................)
2. Rivers – Rain – Groundwater – Oceans (..................)
3. Sand – Oil – Charcoal – Cotton balls (..................)

## 7 Choose from column (A) what suits it in column (B):

**A**

| Column (A) | Column (B) |
|---|---|
| 1 Oceans | a. are located where a river meets a sea. |
| 2 Estuaries | b. often start in mountains. |
| 3 Rivers | c. are considered lands which are partially covered with water. |
| 4 Swamps | d. surround continents. |

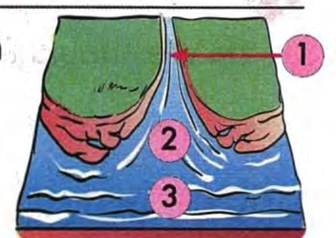
1 .......... 2 .......... 3 .......... 4 ..........

**B**

| Column (A) | Column (B) |
|---|---|
| 1 Solar energy | a. is the water that has been used before in homes and industries. |
| 2 Wastewater | b. observe the water quality during water treatment. |
| 3 Gold | c. is among metals. |
| 4 Bahr Al-Baqar | d. plays an important role in the water cycle. |
| 5 Wastewater engineers | e. is a wastewater treatment plant in Egypt. |

1 .......... 2 .......... 3 .......... 4 .......... 5 ..........

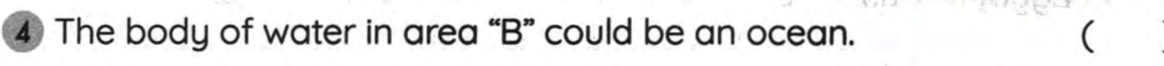
## 8 Study the following figure, then complete:




1. Water in area (..........) is a mixture of salt and fresh water.

2. Water in area (..........) is salt water.
3. Water in area (..........) is fresh water.

## 9 Study the following figure, then choose the correct answer:

1. The body of water in area "A" could be a creek. (   )
2. The body of water in area "D" could be a sea. (   )
3. If a factory is built in area "C", the body of water in area "A" will get polluted. (   )

4. The body of water in area "B" could be an ocean. (   )
5. If a dam is established on the body of water in area "A", the amount of water in area "E" will change. (   )

## 10 Study the following figure, then answer the questions below:

1. What is the name of the opposite model?

..............................................................................

2. Label the figure:

A. .................................... B. ....................................

C. .................................... D. ....................................

E. ....................................



3. What is the importance of this model?

..............................................................................

4. What is the name of this process?

..............................................................................

## 11 Give reasons for:

1. We should turn off water during brushing our teeth.

..............................................................................

..............................................................................

2. Some fish and amphibians that live in fresh water go extinct.

..............................................................................

..............................................................................

3. The poor quality of fresh water affects the living organisms that live in it.

..............................................................................

..............................................................................

4. Egypt has established Ras Mohammed Protectorate.

..............................................................................

..............................................................................

## 12 What happens if:

1. Water is collected in a low-lying area?

.....................................................................

.....................................................................

2. The water of a river meets the water of a sea?

.....................................................................

.....................................................................

3. The quality of water in a pond becomes poor?

.....................................................................

.....................................................................

4. The rate of rainfall on a river increases?

.....................................................................

.....................................................................

5. A factory is built near a stream that flows into a big river?

.....................................................................

.....................................................................

6. We place cows in many small areas of grass?

.....................................................................

.....................................................................

7. You add some sand and mud to pure water?

.....................................................................

.....................................................................

8. Wastewater engineers test the treated water before releasing it to rivers?

.....................................................................

.....................................................................

# Concept 1 Effects of Gravity

## 1 Summary of Concept 1

**Gravity**

1. Gravity is the force of attraction between objects that have mass.
2. It is an invisible force that acts on all objects on or near Earth.
3. If there is no gravity, we will float like astronauts in space.
4. It is a pulling force only.

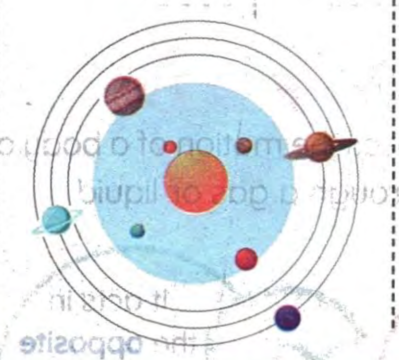
### Examples of Gravity Forces

**1. The Earth's gravity**

It pulls objects with mass down to the center of the Earth.

**2. The Sun's gravity**

It keeps the planets in fixed orbits around the Sun.



**3. The moon's gravity**

It affects the ocean tides.

Moon

Earth

### Factors affecting gravity between two objects:

1. The mass of the two objects
2. The distance between the two objects

**Force:** It is a **pull** or **push** applied to an object to make it move.

**Motion:** It is a change in the position of an object compared to another object.

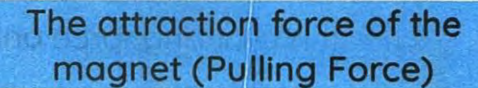
## Types of Forces

### 1 Magnetism

- It is the force of **attraction** or **repulsion** between two magnets or between a magnet and some objects.
- Magnets have a kind of **invisible** force that cannot be seen, known as magnetism.

**The attraction force of the magnet (Pulling Force)**

1. A magnet pulls another magnet.



2. A magnet attracts magnetic materials, such as iron, cobalt, and nickel.



**The repulsion force of the magnet (Pushing Force)**

1. A magnet pushes (repels) another magnet.



### 2 Friction

- It is a force that opposes the motion of a body across a solid surface or through a gas or liquid.




1. It arises between two objects touching each other.
2. It acts in the **opposite** direction of the object's motion.
3. It **slows down** the object's movement.

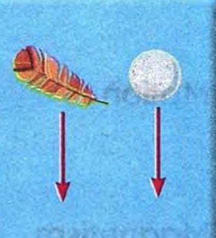
## 3 Air Resistance




- It is a force that **opposes** the movement of an object as it passes through the air.
- When a skydiver opens his parachute during landing, air resistance acts against gravity, causing his drop to slow.

**If there is no air resistance,**

- all bodies will reach the ground at the same time because the force of gravity is constant and acts on all bodies in the same way.

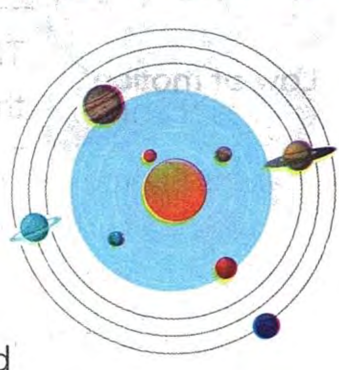


## 4 Wind Force

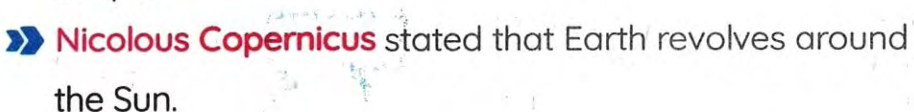
- Wind pushes the blades of a wind turbine.



## Solar System



- Our solar system consists of the Sun, and eight planets revolve around it.
- Each planet revolves around the Sun in a fixed path called an orbit, which has an ellipse (oval) shape.
- Nicolous Copernicus stated that Earth revolves around the Sun.



- Earth revolves around the Sun at a speed that nearly equals 107,000 km per hour.

## 2 Definitions of Concept 1

| | |
|---|---|
| Gravity | • It is the force that pulls objects with mass towards the center of the Earth.<br>• It is the force of attraction that exists between objects that have mass. |
| Force | It's a pull or a push that is applied to an object. |
| Motion | It is a change in the position of an object compared to another object. |
| Magnetism | It's the force of attraction or repulsion between two magnets or between a magnet and some objects. |
| Moon | It is a celestial body that orbits the Earth in a fixed orbit. |
| Friction | It's a force that opposes the motion of a body across a solid surface or through a gas or liquid. |
| Air resistance | It's a type of friction force that opposes the movement of an object as it passes through air. |
| Law of motion | The force of gravity is constant and acts on all objects in the same way. |

## 3 Give Reasons for... Concept 1

1. The moon is attracted to Earth.
   - Due to the gravitational force of the Earth.
2. The astronaut's body floats in space.
   - Because there is no gravity in space.
3. When you throw a ball up into the air, its direction changes.
   - Because the direction of the ball changes because gravity pulls the ball downward.
4. The moon revolves around the Earth in a fixed orbit.
   - Due to the gravitational force of the Earth which attracts moon toward it.
5. The ball that weighs 100 gm falls faster than the ball that weighs 50 gm.
   - Because the gravitational force increases when its mass increases.
6. The moon does not crash into the Earth or collide with it.
   - Due to the gravitational force of Earth, which controls the motion of the moon in a fixed orbit.
7. The Earth's gravity is stronger than the moon's gravity.
   - Because Earth has bigger mass than that of the moon.
8. The bike stops after a while when you stop pedaling.
   - Due to the friction between the tires and ground, the bike slows down until it stops.
9. When skydivers release parachutes, their drop slows down.
   - To increase air resistance to the parachute and slow down his drop.
10. The Sun is considered as the center of the solar system.
    - Because the Sun has the largest gravity in the solar system.
11. Planets revolve around the Sun in fixed orbits.
    - Due to the gravity of the Sun.

# 4 What Happens if...? Concept 1

**1** The skydivers get out of the airplane?

- Skydivers will be pulled toward the ground by the effect of gravity.

**2** The mass of the moon increases?

- The gravity between the moon and the Earth increases, so the moon might crash into Earth.

**3** The distance between the moon and Earth is doubled?

- The gravitational force between them decreases, and the moon may float off into space.

**4** There is no gravity on the Earth's surface?

- All objects on Earth will float off into space.

**5** You throw a ball up?

- The direction of the ball changes due to the force of gravity.

**6** The gravity between the Sun and the planets of solar system is absent?

- All planets will float off into space and leave their orbits around the Sun.

**7** A magnet is placed near to some paper clips?

- The magnet will attract the paper clips.

**8** A skydiver opens his parachute during landing?

- Air resistance will increase, so the speed of his drop will decrease.

**9** You drop a metal ball with heavy mass and a plastic ball with light mass from the same height?

- The metal ball will reach the floor first.

**10** You drop a paper clip and a feather from the same height?

- The paper clip will reach the floor first.

**11** There is no air resistance and you drop a hammer and paper at the same time from the same height?

- They will reach the floor at the same moment.

# 5 Revision on Concept 1

## 1 Choose the correct answer:

1. Gravity keeps the moon in a fixed orbit around .......... .
   a. the Sun  b. the Earth  c. itself  d. another moon

2. The Earth attracts the objects towards .......... .
   a. its center  b. the sky
   c. the moon  d. the Sun

3. What is the force that slows the drop of a skydiver in the air?
   a. Magnetism  b. Gravity
   c. Air resistance  d. a and c

4. The Earth's gravity .......... objects towards its .......... .
   a. pushes –center  b. pulls – poles
   c. pulls – center  d. pushes – poles

5. The gravity force depends on the .......... of an object.
   a. mass and color  b. distance and speed
   c. mass and distance  d. volume and height

6. The gravitational force of an object .......... as its mass increases.
   a. equals zero  b. increases
   c. decreases  d. doesn't change

7. If the distance between the Earth and moon increases, the gravity between them .......... .
   a. increases  b. decreases  c. disappears  d. doesn't change

8. You need to exert the greatest force to move .......... .
   a. a toy car  b. a real bike  c. a book  d. a real car

9. The .......... has the greatest gravity, because it has the .......... mass.
   a. Sun - smallest  b. moon - smallest
   c. Sun - greatest  d. Earth - greatest

10 In the solar system, planets stay in their orbits due to the gravity of the ...... .

a. moon b. Sun c. Mars d. Earth

11 When you throw up a ball in the air, its .................. changes due to the gravity.

a. mass b. color c. volume d. direction

12 All objects on Earth are affected by the .................. force.

a. gravity b. magnetism c. pushing d. electrical

13 When throwing an object vertically upwards, it .................. .

a. moves fast towards space

b. suspends in the air because its gravity is equal to that of Earth

c. returns to Earth under the effect of gravity

d. floats in space because there is no gravity

14 Magnetism is a force that attracts objects made of the following materials, except .................. .

a. nickel b. cobalt c. iron d. wood

15 Friction force .................. the movement of objects.

a. slows down b. increases c. speeds up d. doesn't affect

16 .................. is considered a type of friction force.

a. Air resistance b. Magnetism c. Gravity d. Electrical force

17 A parachute in the air is affected by .................. and .................. .

a. magnetism - gravity b. water resistance - gravity

c. gravity - air resistance d. air resistance - magnetism

18 .................. is a factor that acts against gravity force.

a. Magnetism b. The mass of an object

c. Air resistance d. The shape of an object

19 Which one of the following is affected by more air resistance on dropping them from the same height?

a. An iron nail b. A feather c. A hammer d. A wooden cube

20 Nicolous Copernicus states that "........" is the center of the solar system.

a. Moon b. Earth c. Sun d. Mars

## 2 Put (✓) or (✗):

1. Gravity pushes the objects away from the center of the Earth. ( )
2. The gravity of the moon affects the ocean tides. ( )
3. Without the Earth's gravity, the moon would float off into space.( )
4. The change in an object's position is called force. ( )
5. Magnetism may be a pushing or pulling force. ( )
6. Magnets attract paper clips, which is evidence that magnets have a force.( )
7. The magnet can only exert a pulling force. ( )
8. The Earth's gravity keeps all planets moving in their orbits. ( )
9. A static book on a table isn't affected by gravity. ( )
10. Gravity doesn't affect the direction of the moving objects. ( )
11. Bigger planets have more gravity than small planets. ( )
12. The attraction force between Sun and Earth is less than that between the Earth and moon. ( )
13. Gravity is an invisible force, but we can see its effect. ( )
14. A magnet has the force to attract metals, such as silver and gold. ( )
15. Air resistance pulls a skydiver down towards the ground. ( )
16. A parachute helps in increasing the speed of an object falling to the ground. ( )
17. Magnets can attract all materals. ( )
18. In the absence of air resistance, a parachute will drop faster to the ground. ( )
19. Both gravity and air resistance act in opposite directions from each other. ( )
20. A paper clip reaches the ground before a feather. ( )

## 3 Write the scientific term:

1. It is the change in an object's position relative to another object.

(..............................)

2. The effect that pulls or pushes objects to make them move. (..........)
3. It is the force that pulls the objects down towards the Earth's surface. (..........)
4. It is a celestial body that orbits the Earth. (..........)
5. It is a star that is located in the center of the solar system.(..........)
6. It is the force of the magnet that pulls metal objects toward it. (..........)
7. It is the force that opposes the movement of an object across a solid surface, liquids, or gases. (..........)
8. It is a type of friction force that slows down the falling of objects in the air. (..........)
9. It is a tool that the skydiver uses to slow his drop. (..........)

## 4 Correct the underlined words:

1. The gravity of the <u>Sun</u> affects the ocean tides. (..........)
2. The gravity of the Earth is stronger than the gravity of the <u>Sun</u>. (..........)
3. When two magnets repel, they <u>pull</u> each other. (..........)
4. Friction force <u>speeds up</u> the movement of the object. (..........)
5. <u>Gravity</u> is the force that pulls objects made of iron toward a magnet. (..........)
6. <u>Magnetism</u> always acts against gravity for a falling object in the air. (..........)
7. Gravity always affects the <u>mass</u> of objects thrown up in the air. (..........)

## 5 Complete the following using the words between the brackets:

**A** (center - moon's gravity - Earth's gravity - Sun - orbit )

1. The .............. keeps the moon revolving in its .............. around Earth.
2. The gravity between the .............. and planets, keeps planets revolve in fixed orbits.
3. Gravity pulls the skydivers towards the .............................. of Earth.
4. The .............................. affects ocean's tides on Earth.

**B** (Force - more - Gravity - magnetism - space - less)

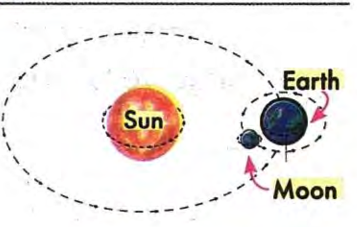
1. A person in a blimp flying in the sky is affected by ...................... gravity than a person standing on the ground.
2. .............................. is a pull or push that is applied to an object.
3. ...................... exerts only pulling force, while .................... could exert pushing or pulling forces.
4. There's no gravity in .............................. .
5. Earth has .............................. gravity than moon, because Earth has more mass.

## 6 In the following figure:

1. The force shown in the opposite figure is called .............................. (gravity - magnetism).
2. These two magnets repel, which means that they .............................. (push - pull) each other.

## 7 Look at the following figure, then answer:

1. .............................. has the largest mass.
2. .............................. has the lowest force of gravity.



## 8 In the following figures:

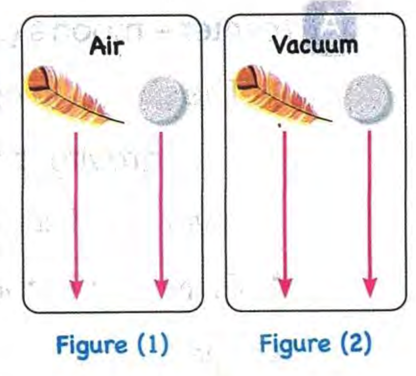


Figure (1) Figure (2)

**A** In which figure the feather and the ball will reach the ground at the same time?

**B** Choose:

In figure (1), if the feather reaches the ground in 10 seconds, so the ball takes .................... (15 – 10 – 8) seconds to reach the ground.



## 9 Give reasons for:

1. The moon is attracted to Earth.

.......................................................................................................................

.......................................................................................................................

2. Paper clips are pulled towards a magnet.

.......................................................................................................................

.......................................................................................................................

3. Astronauts float into space.

.......................................................................................................................

.......................................................................................................................

4. When you throw up a ball in the air, its direction changes.

.......................................................................................................................

.......................................................................................................................

5. Gravity of Earth is greater than gravity of the moon.

.......................................................................................................................

.......................................................................................................................

6. Skydivers land safely when they open their parachutes.

.......................................................................................................................

.......................................................................................................................





## 10 What happens if:

1. The distance between Earth and the moon is doubled?



..........................................................................................

..........................................................................................

2. The mass of the moon decreases to half?

..........................................................................................

..........................................................................................

3. A magnet is placed near to some paper clips?

..........................................................................................

..........................................................................................

4. You press the brakes of your bike?

..........................................................................................

..........................................................................................

5. A skydiver opens his parachute on landing?

..........................................................................................

..........................................................................................

# Concept 2 Patterns of Motion in the Sky

## 1 Summary of Concept 2

**Rotation**: It is the spinning of an object **on its axis.**

**Revolution**: It is the orbiting of an object **around another** object.

**Cycle**: It is a series of events that are **repeated in the same order.**

**Earth's axis**: It is an imaginary line passing **through the North Pole and South** Pole of Earth.

### Earth has two motions

#### 1 Earth rotates around its axis. (Takes one day)

- **Earth rotates** counterclockwise on its vertical axis **at a very high speed.**
- **Earth is slightly** tilted on its axis, where the **angle of tilt changes** throughout the year.

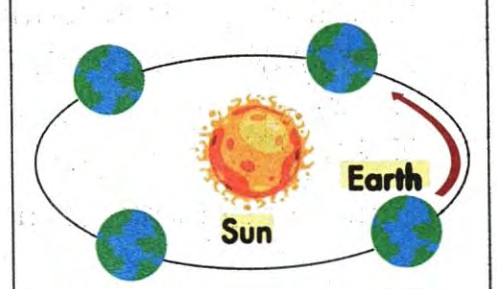
North Pole
23.5°
Axis
South Pole

**Earth's rotation on its axis causes:**

1. **The cycle** of day and night occurs.
2. **The Sun,** planets, and stars appear to move **across the sky.**
3. **Shadows of objects** move throughout the day.

#### 2 Earth revolves around the Sun in an orbit. (Takes one year)

- **Earth's path** around the Sun is elliptical (oval).




**Earth's revolution around the Sun causes:**

- **The cycle** of four seasons.

**NOTE:**

- **We can't feel** the Earth's spinning on its axis, **as we move at the same speed** of the Earth's rotation on its axis.

## Shadow:

- You can observe shadows of objects moving throughout the day.
- The factors that affect the length and angle of a shadow:
  - The position of the Sun affects the length and angle of the shadow.
  - The sunlight availability that changes with the change of seasons.

| | In the early morning or in late afternoon | At noon |
| --- | --- | --- |
| **The Sun's position** | The Sun is low in the sky (in the east or west) | The Sun is high above us in the sky. |
| **The length of the formed shadow** | An object has the longest shadow.<br>Morning Afternoon | An object has the shortest shadow.<br>Noon |

## Universe:

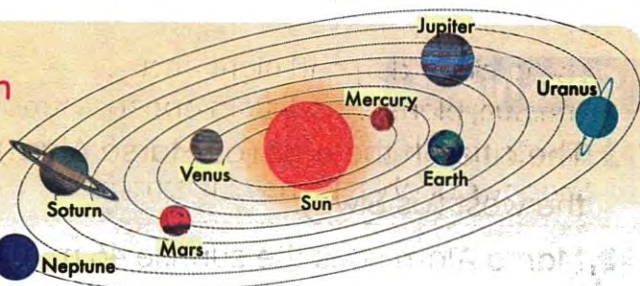
- The wide space that contains celestial objects such as galaxies, stars, planets, moons, comets, meteors and even human-made satellites like International Space Station ....., etc.

## Galaxy:

- A group of stars, planets and gases are held together by gravity.

## Solar System:

- The solar system includes the Sun and eight planets that revolve around the Sun in fixed orbits.
- Planets rotate in their orbits at different speeds.




- Jupiter is the fastest-rotating planet in the solar system.

## Stars

1. Stars are giant spheres of superhot gases made of mostly **hydrogen** and **helium** gases.

2. Stars appear to move across the night sky due to the rotation of the Earth on its axis.

3. Some stars are larger than our Sun, while others are smaller.

## The Sun

1. Sun is a **medium-sized star**.

2. Sun is the **center** of the solar system.

3. The Sun provides the Earth with **heat** and **light** energies.

**Sunshine:**

- The cities in the east (as Marsa Alam) see the sunrise before the cities in the west (as Siwa).
- Marsa Alam sees the sunrise 46 minutes before Siwa.
- The length of day in Marsa Alam is always longer than it is in Siwa.

# Constellation


Orion constellation

### Constellation

- It is a group of stars that looks like a pattern of a certain shape in the sky.

## Properties of Stars in Constellations

1. Stars are not connected to each other at all.
2. Stars are far away from the Earth.
3. Stars' positions don't change.

## Importance of Constellations

- Locations of constellations during the year help us determine the main four directions (north – south – east – west).

# Motion of Constellations

Stars seem to move across the night sky. But, in fact, the positions of the stars do not change.

**Reason**



Earth's rotation around its axis

You can see more different constellations in the winter than in the summer.

**Reason**



Earth's revolution around the Sun

## Moon:



- The moon doesn't create its own light, but it reflects the sunlight that falls on it.
- Moon phases change as the moon revolves around the Earth.
- Moon phases are changed during the lunar (Hijri) months.

## Guidelines to Help Students

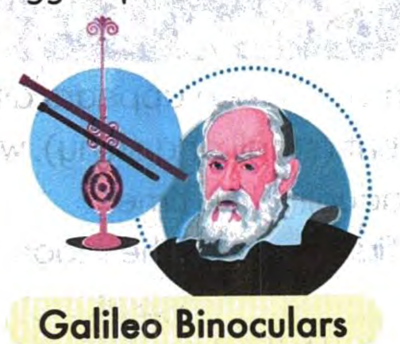
| If the question says: | Moon's phase will be: |
|---|---|
| The moon appears fully illuminated. (It appears as a completely bright circle.) | Full Moon |
| The moon appears fully darkened. | New Moon |
| One half is illuminated + the other half is darkened. | First or Second Quarter |
| The edge of the moon's face appears illuminated. (The bright part is less than the dark one.) | First or Second Crescent |
| The illuminated part of the moon's face increases gradually. The bright part is greater than the dark one. | First Gibbous |
| The illuminated part of the moon's face decreases gradually. (The bright part is greater than the dark one.) | Second Gibbous |

## The moon phases during the lunar month "Hijri month":

| Moon Phase | Description |
|---|---|
| ① First Crescent | • The edge of the moon's face appears as an illuminated crescent (small and shiny), where its size increases gradually with time.<br>• This phase is the first phase of the moon phases. |
| ② First Quarter | • One half of the moon's face is illuminated.<br>• The other half of the moon's face is darkened. |
| ③ First Gibbous | • The bright illuminated ened part of the moon's face increases gradually.<br>• The line separating the illuminated part and the darkened part appears curved. |
| ④ Full Moon | • The apparent face of the moon that faces the Earth is fully illuminated.<br>• This phase appears in the middle of the lunar month. |
| ⑤ Second Gibbous | • The illuminated part of the moon's face decreases gradually.<br>• The line separating the darkened part and the illuminated part appears curved. |
| ⑥ Second Quarter | • One half of the moon's face is darkened.<br>• The other half of the moon's face is illuminated. |
| ⑦ Second Crescent | • The edge of the moon's face is an illuminated crescent. |
| ⑧ New Moon | • The apparent face of the moon that faces the Earth is fully darkened.<br>• This phase appears on the last day of the lunar month. |

# Using Technology to Study the Universe

» Technology helps us invent some tools, such as:



Galileo Binoculars



Hubble Telescope

## Importance of binoculars and telescopes:

They help us take a closer look at more distant objects in greater detail, such as:

1. The surface of the moon
2. Asteroids
3. Our neighboring planets
4. Stars in and out our galaxy

## Planetarium

» It is a place where we can see images of stars, planets, constellations, and other celestial bodies.

### How the Planetarium Works

1. A projector that displays images on its ceiling that looks like a dome.
2. Special computer programs are used to show pictures of:
   - what the sky looks like during certain times of the month or year.
   - what the sky looked like many years ago.



Copernicus

- He proved that the Sun is the center of the solar system.

# 2 Definitions of Concept 2

| | |
|---|---|
| **Earth's axis** | It's an imaginary line passing through the North Pole and South Pole of Earth. |
| **Earth rotation** | It is the spinning of the Earth on its axis. |
| **Earth revolution** | It is the orbiting of the Earth around the Sun. |
| **Cycle** | It is a series of events that are repeated in the same order. |
| **Solar system** | It's a system that includes the Sun and eight planets that revolve around the Sun in fixed orbits. |
| **Jupiter** | It is the fastest-rotating planet on its axis in the solar system. |
| **Constellation** | It is a group of stars that forms a pattern or looks like a certain shape in the sky. |
| **Full moon** | It's a moon phase that appears in the middle of the lunar month, in which the moon is fully illuminated. |
| **First Crescent** | It is the first phase of the moon phases. |
| **New Moon** | It's a moon phase that appears on the last day of the lunar month, in which the moon is totally dark. |
| **Planets** | They're dark celestial bodies that revolve around the Sun in fixed orbits. |
| **Sun** | • It's a medium-sized star.<br>• It is the only star in the solar system.<br>• It is the center of the solar system. |
| **Stars** | They are giant spheres of superhot gases; most of them are hydrogen and helium. |
| **Galaxy** | It's a group of stars and other celestial objects held together by gravity. |
| **Universe** | It's a wide space that contains celestial objects, such as stars, galaxies, comets, meteors, and human-made satellites. |
| **Atmosphere** | It is a protective layer around Earth that allows some light waves to pass through while blocking some other light waves.. |
| **Planetarium** | It is a place where we can see images of stars, planets, constellations, and other celestial bodies. |

## 3 Give Reasons for... Concept 2

1. The regular pattern of day and night occurs every day.
   - Due to the rotation of the Earth around its axis.
2. All the time, half of the Earth has day and the other half has night.
   - Due to the rotation of the Earth around its axis.
3. The Sun appears to move across the sky throughout the day.
   - Due to the rotation of the Earth around its axis.
4. The occurrence of four seasons.
   - Due to the Earth's revolution around the Sun.
5. Sunrise and sunset times are different each day on Earth
   - Because of Earth's elliptical orbits and the tilt of the Earth on its axis.
6. We can't feel the fast movement of the Earth.
   - Because we are moving at the same speed of Earth.
7. The position of the Sun changes in the sky throughout the day.
   - Due to the Earth's rotation around its axis.
8. The movement of shadows during the day.
   - Due to the Earth's rotation around its axis.
9. The shadow was important for the ancient Egyptians
   - They used shadows to know time by using the sundial.
10. Some constellations still exist even though you cannot see them.
    - Because they are just not visible from where you are located on Earth.
11. The appearance of star patterns and constellations is associated with specific seasons.
    - Due to the revolution of the Earth around the Sun.
12. The moon appears bright in the sky, although it doesn't create its own light.
    - Because the moon reflects the sunlight falling on it.
13. Stars seem bright in the night sky.
    - Because they are made of hot gases.

**14** **The moon phases change during the Hijri month.**

- Due to the revolution of the moon around Earth.

**15** **Binoculars and telescopes have great importance for humans.**

- They help us take a closer look at more distant objects in greater detail, such as the moon's surface, asteroids, our neighboring planets, and stars

**16** **The Sun looks much bigger than other stars.**

- Because the Sun is the nearest star to Earth.

**17** **Astronauts cannot be sent to study stars or other celestial bodies.**

- Because the universe is so big, and these celestial bodies are just too far away.

## 4 What Happens if...? Concept 2

**1** **The Earth rotates around its axis?**

- The pattern of day and night will happen.

**2** **The Earth doesn't rotate around its axis?**

- Day and night pattern will not happen.

**3** **You look at the sky in the middle of the day (at noon)?**

- You will see the sun in the center of the sky.

**4** **Half of the Earth doesn't receive any sunlight?**

- This half of Earth will have night.

**5** **You face the north direction of the Earth and look at the sky in late afternoon?**

- The Sun would be to your left in the sky.

**6** **The Earth revolves around the Sun?**

- The cycle of four seasons will occur.

**7** **The sunrays fall on an object when the Sun is at noon? (According to the shadow's length)**

- A short shadow of the object will be formed.

**8** **The sunrays fall on an object when the Sun is at the early morning? (According to the shadow's length)**

- A long shadow of the object will be formed.





# 5 Revision on Concept 2

## 1 Choose the correct answer:

1. Gravity keeps the moon in a fixed orbit around ........ .
   a. the Sun b. the Earth c. itself d. another moon
2. The Earth takes ........ to complete one rotation around its axis.
   a. whole day b. 24 days c. 12 hours d. 48 hours
3. Day and night phenomenon occurs due to the rotation of the Earth around ........ .
   a. the Sun b. its axis
   c. the moon d. the solar system
4. The Sun always rises from the ........ and sets in the ........ .
   a. west - east b. south - west c. east - south d. east - west
5. The number of stars in the solar system is ........ .
   a. one b. eight c. nine d. two
6. The solar system includes ........ .
   a. one moon only b. planets only
   c. the Sun and planets d. stars and galaxies
7. The Earth's axis is ........ .
   a. vertical b. horizontal c. circular d. real
8. A city in the west of Egypt sees the sunrise ........ another city in the east.
   a. after b. before
   c. at the same time d. earlier
9. The Earth's rotation on its axis causes all the following, except the ........ .
   a. sunrise and sunset of the Sun b. sequence of day and night
   c. movement of shadow d. sequence of seasons
10. ........ depends on the movement of shadow throughout the day.
    a. Sunrise b. Sunset c. Sundial d. Hand watch
11. The shortest shadow of an object is formed ........ .
    a. in morning b. in afternoon c. at noon d. at night

12 Constellations may only be visible during certain seasons due to the Earth's revolution around ............ .

a. the Sun b. its axis c. the moon d. Jupiter

13 Constellation appears ............ in the sky during the year.

a. at different position b. at the same position

c. in the winter only d. in the summer only

14 Changing the location of the Sun in the sky changes the ............ of the shadow.

a. length b. angle

c. color d. length and angle

15 The moon appears completely dark in ............ phase, while it appears completely bright in ............ phase.

a. Full Moon – New Moon b. New Moon – First Quarter

c. New Moon – Full Moon d. Full Moon – Second Crescent

16 The cycle of the moon lasts about a ............ .

a. day b. year c. month d. week

17 ............ are made of hot gases, so they seem bright.

a. Planets b. Moons c. Stars d. Moon and Sun

18 The location of constellations in the sky across the year helps us determine the ............ .

a. time b. main directions c. weather d. climate

19 Which statement about stars is true?

a. Stars are made of hot liquids.

b. Stars in constellations are so close to us.

c. All stars have the same size. d. Stars are made of hot gases.

20 Moon revolves around the Earth in a/an ............ orbit.

a. circular b. straight c. elliptical d. rectangular

21 Moon appears as a completely bright circle at ............ phase.

a. New Moon b. Full Moon

c. Second Quarter Moon d. First Quarter

22 ............ has the greatest gravitational force in the solar system.

a. Jupiter b. Moon c. Earth d. Sun

23 Some telescopes on the Earth's surface can't observe distant celestial bodies due to the presence of ........ .

a. sunlight b. rocks c. atmosphere d. sound waves

24 All the following can be seen in the night sky, except ........ .

a. moons b. the Sun c. stars d. constellations

## 2 Put (✓) or (✗):

1 Day and night pattern occurs due to the revolution of the Earth around the moon. (   )

2 The Earth revolves around the Sun once every 24 hours. (   )

3 The Earth takes 12 hours to make a half rotation around its axis. (   )

4 The Sun appears in the same place in the sky all day. (   )

5 The Sun appears in the east direction during the early morning. (   )

6 Earth rotates anticlockwise on its axis from east to west. (   )

7 Earth rotates slower than Jupiter, so the day on Jupiter is longer than 24 hours. (   )

8 The angle of the tilt of the Earth on its axis is constant all the year. (   )

9 The length of day and night are always equal during the winter. (   )

10 Earth rotates around its axis at low speed. (   )

11 Constellations have similar shapes in the sky. (   )

12 You can see the same constellations in the winter and summer. (   )

13 Moon and stars make their own light. (   )

14 Both Earth and moon orbit the Sun. (   )

15 At full moon, we can't see the moon in the sky. (   )

16 The New Moon phase occurs when the moon is between the Earth and the Sun. (   )

17 Stars are superhot gaseous sphere; most of them are helium and nitrogen. (   )

18 The Sun is necessary for the continuity of life on Earth. (   )

## 3 Write the scientific term:

1. It is an imaginary line passing through the North Pole and South Pole of the Earth. (..................)
2. It is the time taken by Earth to complete one rotation around its axis. (..................)
3. It is the fastest planet during its rotation on its axis in the solar system. (..................)
4. It includes the Sun and eight planets revolving around it. (..................)
5. It is a group of stars that looks like a certain shape in the sky.(..................)
6. It is the phase of the moon that appears in the middle of the lunar month. (..................)
7. It is the phase of the moon that appears in the last day of the lunar month. (..................)
8. It is a celestial body that orbits the Earth. (..................)
9. They are giant spheres of superhot gases; most of them are hydrogen and helium. (..................)
10. It is a group of stars, planets, and gases are held together by gravity. (..................)
11. It is the wide space that contains celestial objects, such as galaxies, stars, and planets. (..................)
12. He is the scientist who proved that the Sun is the center of the solar system. (..................)
13. It is the nearest star to the Earth. (..................)
14. It is a place where people can see images about planets, stars, constellations, and other celestial bodies. (..................)

## 4 Correct the underlined words:

1. The Earth rotates **clockwise** around its axis. (..................)
2. Planets rotate on their axes at **the same** speed. (..................)
3. The Earth orbits the Sun in a **circular** path. (..................)
4. The Earth rotates around its axis once every **30** hours. (..................)

5 The **moon** is considered a medium star. (..................)

6 **First Gibbous** phase follows the First Crescent phase. (..................)

7 The solar system contains more than 200 **stars**. (..................)

8 The planetarium has a **triangular** ceiling. (..................)

## 5 Complete the following using the words between the brackets:

**A** ( planets - reflects - day - middle - night - moon)

1. When half of the Earth faces the Sun, it has .................. and the other half has .................. .
2. The Sun can be seen above in the center of the sky at the .................. of the day.
3. Both .................. and .................. don't make their own light.
4. We see the moon bright in the sky because it .................. the sunlight.

**B** (west - axis - Sun - east - 24 hours - tilt)

1. The Earth is slightly .................. around its axis.
2. Earth rotates anticlockwise around its axis from .................. to .................. .
3. Earth rotates around its vertical .................. every .................. .
4. The solar system includes the .................. at its center and eight planets around it.

**C** (Sun's position - east - amount of sunlight - shortest- pattern )

1. The length and angle of shadow depend on the .................. reaching the Earth, and the .................. in the sky.
2. A constellations is a group of visible stars that form a .................. .
3. At noon, the Sun forms the .................. shadow of objects.
4. Every night, we can see stars appear from the .................. direction.

**D** (helium - heat - hydrogen - oxygen - light)

1. The Sun provides Earth with .................. and .................. .
2. Most of heat and light energies of the Sun are produce due to the reaction between .................. and .................. .

## 6 Cross out the odd word:

1. New Moon – Full Moon – First Quarter – Day and Night(..........................)
2. Cycle of day and night – Cycle of four season – Change in the length of the shadow – Stars appears to move (..........................)

## 7 Choose from column (A) what suits it in column (B):

**A**

| Column (A) | Column (B) |
|---|---|
| 1 The Earth's axis | a. is the center of the solar system. |
| 2 The Sun | b. is resulted from the Earth's rotation on its axis. |
| 3 Day and night cycle | c. is resulted from the Earth's revolution around the Sun. |
| 4 Seasons cycle | d. an oval path. |
| 5 Earth's revolves around the Sun in | e. is vertical and passes through the two poles of Earth. |

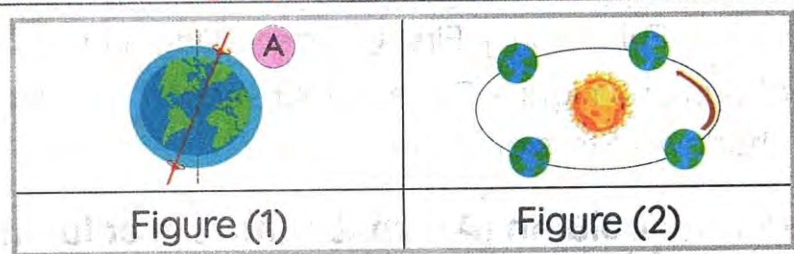
1 .......... 2 .......... 3 .......... 4 .......... 5 ..........

**B**

| Column (A) | Column (B) |
|---|---|
| 1 The Sun | a. is the first-time piece used by ancient Egyptians. |
| 2 Sundial | b. causes constellations appear at different locations across the year. |
| 3 Earth's revolution around the Sun | c. causes the stars to appear moving across the night sky. |
| 4 Earth's rotation around its axis | d. is a medium-sized star. |

1 .......... 2 .......... 3 .......... 4 ..........

## 8 Study the following figures, then put (✓) or (✗):




1. Figure (1) shows the Earth's rotation around its axis. ( )
2. Figure (2) represents the revolution of the Sun around the Earth. ( )
3. Cycle of day and night occurs due to the movement of Earth in figure (1). ( )
4. The line (A) in figure (1) is a real line that passes through Earth's two poles. ( )

## 9 Study the opposite figure, then put (✓) or (✗):

1. This constellation called "Orion". ( )
2. This constellation was named relative to a mythical hunter by the ancient Romans. ( )
3. We can see this constellation in the night sky all the year. ( )
4. This constellation is made of a group of stars. ( )

## 10 Study the opposite figure, then put (✓) or (✗):

1. This represents the Full Moon phase. ( )
2. This phase occurs on the last day of the lunar month. ( )
3. First Gibbous occurs before this moon phase. ( )
4. Second Quarter occurs after this phase. ( )

## 11 Study the following figure of the solar system, then put (✓) or (✗):

1. The Sun locates in the center of the solar system. ( )
2. The Sun is considered a planet. ( )
3. The Sun gives off light only. ( )
4. The Sun has the biggest mass in the solar system. ( )
5. Earth is the only planet in the solar system. ( )
6. There's only one moon in the solar system. ( )

## 12 Give reasons for:

1. The occurrence of day and night phenomenon.

.......................................................................................................

.......................................................................................................

2. The occurrence of four seasons.

.......................................................................................................

.......................................................................................................

3. The difference of day length from a city to another.

.......................................................................................................

.......................................................................................................

4. The day on Earth is longer than that on Jupiter.

.......................................................................................................

.......................................................................................................

5. We cannot feel the high speed of the Earth's rotation.

.......................................................................................................

.......................................................................................................

6. We can see different constellation across the year.

.......................................................................................................

.......................................................................................................

7. Stars seem bright at the night sky.

.......................................................................................................

.......................................................................................................

8. The moon appears bright at the night sky.

.......................................................................................................

.......................................................................................................

9. The moon goes different phases throughout the lunar month.

..............................................................................................................................

..............................................................................................................................

10. The Sun appears to move across the sky from east to west.

..............................................................................................................................

..............................................................................................................................

## 13 What happens if:

1. The Earth rotates around its axis?

..............................................................................................................................

..............................................................................................................................

2. Half of Earth faces the Sun?

..............................................................................................................................

..............................................................................................................................

3. The Earth stops rotating around its axis?

..............................................................................................................................

..............................................................................................................................

4. Both Earth and Jupiter rotate on their axes at the same speed?

..............................................................................................................................

..............................................................................................................................

5. Stars were made of cold gases?

..............................................................................................................................

..............................................................................................................................

6. The Sun's gravity disappears?

..............................................................................................................................

..............................................................................................................................

# Worksheets with model answer on concept (3.1)

## Worksheet (1)

### 1-Choose the correct answer:

1. All the following are components of the atmosphere, except…………

a. oxygen gas. b. nitrogen gas.

c. molten rocks. d. water vapor.

2. Rocks are broken down into smaller particles during …………………process

a. photosynthesis. b. weathering

c. erosion. d. respiration

3. Which of the following is a part of the hydrosphere ?

a. Water. b. Air. c. Rocks. d. Plants.

4. Which of the following is a part of the biosphere ?

a. Ice. b. clouds. c. Water. d. Animals.

5. By heating of water it changes from……….….. state to…..……….

a. solid-liquid. b. liquid – solid.

c liquid-gas. d. gas liquid.

### 2-Write the scientific term of each of the following:

1. A water body that is surrounded by land.(…………………………………)
2. A cycle shows the continuous movement of water from the Earth to the atmosphere then to the Earth again.(…………………………………)
3. The process of breaking down of rocks into smaller particles due to the effect of rain, water or temperature.(…………………………………)

## Worksheet (2)

### 1-Put (√) or (×):

1. Earth's systems don't interact with each other. (          )

2. When wind carries seeds of some plants to new places an interaction between the atmosphere and biosphere can be observed. (          )

3. Weathering of rocks because of the effect of rains is an example of an interaction between hydrosphere and biosphere. (          ).

4. Water evaporates from the surface of a lake will move from the atmosphere to hydrosphere. (          )

### 2-Complete the following sentences:

1. A rat that digs a barrow in the soil is an example of the interaction between……………………………and geosphere.
2. Irrigation of plants is an example of the interaction between two Earth's systems which are ………………….and ……………….……
3. Air pollution due to the burning of wood of trees is an example of an interaction between two Earth's spheres which are ……………....
and…………………….……

## Worksheet (3)

### 1-Write the scientific term of each of the following:

**1. The system of Earth all different landforms. (……………………………….)**

**2. The Earth's system which is made up of water. (……………………………)**

**3.A large area of the world that has similar soil , climate , plants and animals. (……………………………….)**

**4. The Earth's system which consists of a mixture of gases surrounding Earth. (………………………………….)**

### 2-Give reasons for

**1. Importance of atmosphere for plants in making their food.**

**…………………………………………………………………………………………**

**2. More than 50% of known living organisms live in the aquatic environments.**

**…………………………………………………………………………………………**

**3. Most of the fresh water on Earth can't be used for drinking.**

**…………………………………………………………………………………………**

# Worksheet (4)

## 1- Give reasons for:

**1. Some ponds and lakes may dry up during some months.**

……………………………………………………………………………………………

**2. No green plants can survive in the abyssal zones of oceans.**

……………………………………………………………………………………………

## 2-What happens to …?

**1. Animals that live in lakes if they dry up.**

……………………………………………………………………………………………



# Worksheet (5)

## 1-Choose the correct answer :

1-Rivers and streams contain ……….water , while ponds contain ……….water

a-salt – fresh  b-fresh – salt

c-running – still  d-still – running

2-Water lilies can live in …………….

a-ponds  b-seas

c-oceans  d-deserts

## 2-Put ( √ ) or ( × ) :

1-Some types of worms live in ocean. (   )

2-Rivers and steams are running fresh water bodies. (   )

3-Some animals live in streams such as catfish and salmon ( trout ). (   )

Choose from column (B) what suits it in column (A) :

| (A) | (B) |
|---|---|
| 1. Shallow areas of oceans | a. don't receive sunlight. |
| 2. Abyssal areas of oceans | b. contain coral reefs. |
| 3. Frogs | c. live in salt water. |
| 4. Dolphins | d. live in fresh water. |
| | e. live in deserts. |

# Model answer on concept (3.1)

## Worksheet (1)

**1-Choose the correct answer:**

**1.c 2.b 3.a 4.d 5.c**

**2-Write the scientific term of each of the following:**

**1. Lake**

**2. Water cycle. 3. Weathering**

## Worksheet (2)

**1-Put (√) or (×):**

**1. x 2.√ 3.x 4.x**

**2-Complete the following sentences :**

**1.biosphere. 2.hydrosphere-biosphere 3. atmosphere-biosphere**

## Worksheet (3)

**1-Write the scientific term of each of the following:**

**1. Geosphere. 2. Hydrosphere**

**3. Biome. 4. Atmosphere**

**2-Give reasons for:**

**1. Because plants fake in carbon dioxide gas from air during photosynthesis process.**

**2. Because water covers about 71% of Earth's surface.**

**3. Because most of the fresh water on Earth are in the from of frozen water.**

# Worksheet (4)

**1-Give reasons for:**

**1. Because when the temperature increases in summer, water evaporates faster.**

**2. Because the abyssal zones don't receive sunlight, which is important for making food in plants.**

**2-What happens to ...?**

**1. They have to adapt to the changes that happen or they'll die.**

# Worksheet (5)

**1-Choose the correct answer :**

**1 – c / 2 – a**

**2-Put ( √ ) or ( × ):**

**1-( × ) / 2- ( √ ) / 3- ( √ )**

**3-Choose from column ( B ) What suits it in column ( A ) :-**

**1-( b ) / 2- ( a ) / 3-( d ) / 4- ( c )**





# Worksheets with model answer on concept (3.2)

## Worksheet (1)

### [1] Choose the correct answer:

1- The basic liquid matter which is needed by humans, animals and plants to survive is…………….

a. milk  b. water  C. Oil  d. alcohol

2- Water can control the………. of living organisms bodies.

a. length  b. height  C. temperature  d. volume

3- All the following are from sources of water on the Earth, except……………

a. ground water  b. ponds  C. glaciers  d. molten rocks

4- At the end of Nile River , there is a/an……...between Nile River and Mediterranean sea.

a. lake  b. wetland  C. Ocean  d. estuary

5- ……………are formed when water collects in low-lying areas.

a. Seas  b. Oceans  C. Lakes  d. Rivers

6- Among the kinds of wetlands are…………………..

a. swamps and lakes  b. marshes and bogs
c. ponds and oceans  d. swamps and estuaries

7- Estuary is formed when the water of……….meets the water of…………

a. a river - a sea  b. a river- groundwater
c. a sea - an ocean  d. a sea-a wetland

### [2] Put (√) or (×):

1-Oceans are considered as saltwater bodies .  (  )

2- Among the sources of fresh water are rains. (  )

3- The percentage of fresh water is higher than that of salt water, so we should conserve salt water. (  )

4- Turning off the water tap, while washing your hair is from the ways to conserve water. (  )

**5- Rivers often start in mountains in the form of estuaries. (   )**
**6- Assail lake is surrounded by land and it is a low-lying area. (   )**
**7-The type of water in wetlands is salt water only. (   )**
**8- There is an estuary between Nile River and Mediterranean Sea.(   )**

## [3] Write the scientific term of each of the following:

**1- It is the liquid that all living organisms need to live (………………….)**
**2- A type of water which is suitable for drinking (………………..)**
**3- A water body that often starts in the mountain as a stream. (……………….)**
**4- The large water body that is surrounded by land. (………………………)**
**5-The water bodies that surround the continents. (………………………)**
**6- It is a land area which is partially covered with water. (……………………)**

## [4] Complete the following sentences:

**1- In High Dam, water is used to generate………………**

**2- Rivers contain……..... water while oceans contain…………………water.**

**3- Glaciers are sources of fresh water which have a………state of matter.**
**4- We must take a quick shower to conserve………………**

## [5] Give reasons for:

**1- We must conserve fresh water**

**………………………………………………………………………………………**
**2- You should turn off water tap during brushing your teeth**

**………………………………………………………………………………………**

## [6] What happens if...?

**1- Water is collected in a low-lying area.**

**………………………………………………………………………………………**

## Worksheet (2)

### [1] Choose the correct answer:

1-People obtain their needs of ……………….that is found in lakes , rivers , streams and ground water .

a-oxygen gas b-seaweed c-salt water d-fresh water .

2- The area of land where all the water flows to a common location as ocean is called………………

a. tributary b. estuary c. wetland d. watershed

3- The level of water in a river may increase causing flooding, when there is more……………………..

a. rainfall b. wind c. sunlight d sediments.

### [2] Put (√) or (X):

1- We must conserve fresh water because it is limited on Earth. ( )

2- Building factories is from human strategies to control and conserve fresh water. ( )

3-When there is more rainfall, the level of water in rivers will decrease causing flooding. ( )

### [3] Write the scientific term of each of the following:

1- It is an area of land where all the water flows to a common location usually an ocean, a sea or other large water body. (…………………….…)

### [4] Complete the following sentences:

1-When the rate of rainfall decreases , the level of water in rivers will ………. Causing …………..

2-The type of water that is found in rivers most of lakes and streams is ……………….water .

### [5] Give reasons for:

1- Scientists tend to preserve freshwater sources on Earth

…………………………………………………………………………………………

### [6] What happens if…?

1. The quality of fresh water becomes poor. ?

…………………………………………………………………………………………

# Worksheet (3)

## [1] Choose the correct answer:

1. Tributary usually ends by the flowing of its water into bigger………..

 a. ocean    b. sea    C. river    d. lake

2. The correct flowing of water bodies that are connected with others is

 a. bigger rivers ⟶ tributaries ⟶ Oceans.

 b. tributaries ⟶ bigger rivers ⟶ Oceans.

 C. Oceans ⟶ tributaries ⟶ bigger rivers.

 d. bigger rivers ⟶ Oceans ⟶ tributaries.

3.All the following reasons cause water pollution in a river , except …………

 a-litter of a nearby trash dump .

 b-waste of a nearby factory .

 c-chemical fertilizers of a nearby farm .

 d-building a dam across the river .

## [2] Put (√ ) or (X):

1- The water of tributaries flow directly into seas and oceans. (   )

2- Upstream is the place where a river starts. (   )

3-Dam can hold the water behind it which causes a change in the amount of water in a water body . (   )

## [3] Write the scientific term of each of the following:

1- They are small water bodies such as small creeks or streams that flow into bigger rivers. (……………..……….)

2- A building established across a river which can hold water behind it.
(……………………..…….)

## [4] Complete the following sentences using the words below:

(Chemical fertilizers - bays - creeks – seas - dams - streams )

**1- Tributaries are considered as small……….or……….that flow into bigger rivers then into large water bodies as……………..and…………………**

**2- A farm that is found near a tributary may cause pollution to the water body if this farm using…………..**

**3. Building…………across a tributary can change the amount of water in it.**

## [5] Give reasons for:

**1- Farms near tributaries may cause water pollution.**

**……………………………………………………………………………………………**

## [6] What happens if…?

**1- A trash dump is established near a tributary that is connected with a river.**

**……………………………………………………………………………………………**

## Worksheet (4)

### Q.1) Complete the following:

1- Plastic is made from…………while paper and wood are made from……….

2- The run out of ………………………….. causes wells to become dry.

3- To conserve water ,we can ….time of washing our hands.

### Q.2) Choose the correct answer:

1- If some rabbits are placed in only one large area of grass ,this is considered as an example of ……………….of green areas.

a- Deforestation b- preservation c- sustainability d- pollution

2- Prevent developing of Ras Mohammed Protectorate is considered as an example of …………….

a- Preservation b- pollution
c- sustainability d- consumption

3- Cutting down too many trees of forests leads to……………………
a. deforestation and soil deposition. b- overpopulation and soil erosion
c. deforestation and soil erosion. d- overpopulation and soil deposition

4- Family (A) Consists of 3 members and family (B) consists of 4 members, if you know that each member use 20 liters to washing hand daily, so the total amount of water that is used by family (A) is……………that is used by family (B).
a. more than b-less than c- double d- equal to

### Q.3) Write scientific term :

1- The action of control reaching of humans to the natural resources. ( ……………………. )

2- It means using resources in a way that does not negatively affect the future supply of theses resource. ( ……………………..)

## Q.4) Give reason for:

1- We should turn of water during washing dishes.

……………………………………………………………………………………………………

2- Countries prevent using or developing natural resources in some protected areas of land.

……………………………………………………………………………………………………

## Q.5) Choose from column (B) what suits it in column (A):

| (A) | (B) |
|---|---|
| 1- Cotton | a- Can be used in making plastic. |
| 2- Oil products | b- Can be used in making paper. |
| 3- Trees | c- Can be used in making clothes. |
| | d- Can be used in making cans. |

1……………………. 2……………………… 3…………………

## Worksheet (5)

**Q.1) Put (√) or ( x ) :**

1- Recycling of wastewater means removing waste materials from it. ( )

2- Dams can be used to filter polluted water to be used again. ( )

3- Adding some of mud to a clean water can pollute it. ( )

4- Cotton can be used as a filter to remove waste from water. ( )

5-Water is considered as a nonrenewable natural resource. ( )

**Q.2) Choose the correct answer:**

1- …………….can be used to recycle wastewater to be used again in human activities.

a- Bottles b-Filters c- Dams d- Generators

2- All the following materials can be used to filter wastewater in simple water filter ,except…………………….

a- Cotton b- wood c- charcoal d- sand

3-…………….process is used to get filtered water from polluted water.

a- Recycling b- Sustainability c- Preservation d- Conservation

4-Sand, charcoal and cotton can be used to remove all the following materials from wastewater, except……………………….

a. small pieces of plastic. b- salt dissolves in water

C. small particles of mud d-small pieces of rocks

5- In simple water filter, wastewater must pass through……………………….

a- cotton hen charcoal then sand b- cotton hen sand then mud.

C- charcoal hen cotton then sand. D- sand then, charcoal then cotton.

## Q.3) What happens if:

- You mix clear water with small amount of mud.

…………………………………………………………………………………………

## Q.4) Give reason:

- Scientists recycle fresh wastewater to get filtered water again.

…………………………………………………………………………………………

## Q.5) Look at the following figure, then answer:

1. ...............
2. ...............
3. ...............
4. ...............
5. ...............

A) Label the figure using the following words:
(charcoal- wastewater- cotton- filtered water- sand)

B) The tool above shows a simple …………..,and it is used to remove …………….materials from wastewater. (complete)

## Worksheet (6)

### Q.1) Put (√) or ( x ) :

1-In water treatment plants, harmful materials are removed from wastewater to reuse it again. (  )

2- Wastewater engineers do not test the treated water after finishing the water treatment process. (  )

3- Wastewater engineers decide where to build water treatment plants. (  )

4- Hydrologists are scientists that work on recycling wastewater in water treatment plants. (  )

### Q.2) Write the scientific term:

1- They are stations which recycle wastewater by removing harmful materials from wastewater to reuse it. (……………………….)

2- Scientists who work in water treatment plants. (…………………..)

3- It is the water that has already been used in homes and different industries. (………………….)

### Q.3) Give reason for :

-Wastewater engineers test the treated water.

……………………………………………………………………………………

## Q.4) Choose the correct answer:

1- All the following may happen to the treated water, except………………..

a- It is used again by human  b- it is released into air

c- it is released to river  d- it is released to lakes

2-Water cycle is considered as an example of……………..

a-Recycling water  b- preservation water

c- overusing water  d- conservation water

## Q.5) Complete the following:

1- Wastewater engineers work in ……….plants and design tools that provide us with clean………………

2- Water treatment plants recycle the………………by removing harmful materials from it to reuse again.

3- Wastewater engineers design ways to protect communities from…………………

# Model answer on concept (3.2)

## Worksheet (1)

{1} 1- b / 2- c / 3- d / 4 – d / 5 - c / 6 – b / 7 – a

{2} 1-( √ ) / 2- (√ ) / 3- ( X ) / 4- ( √) / 5-( × ) / 6- ( √ ) / 7- ( × ) / 8 – ( √ )

{3}

| 1-Water | 2-Fresh water | 3-River | 4-Lake | 5-Ocean | 6-Wetland |
|---|---|---|---|---|---|

{4} 1- electricity 2- fresh – salt 3- solid 4- fresh water

{5} 1- Because there is a limited amount of fresh water on earth

2- To conserve fresh water

{6} 1-A lake is formed

## Worksheet (2)

{1} 1- d / 2- d / 3- a

{2} 1- (√) 2-( × ) 3- ( × )

{3} 1- Watershed

{4} 1- decrease - drought / 2- fresh

{5} 1- Because , the amount of fresh water is limited on Earth

{6} 1- It leads to death of living organisms and extinction of some species live in fresh water.

## Worksheet (3)

{1} 1- c / 2- b / 3- d

{2} 1- ( × ) / 2- (√) / 3- (√)

{3} 1- Tributaries / 2- dam

{4} 1- Creeks – streams – bays – seas / 2- chemical fertilizers / 3- dams

{5} 1- Due to using of chemical fertilizers that cause water pollution

{6} 1- The litter of the trash dump will be blown into the water of tributary then into the river causing water pollution.

## Worksheet (4)

**Q.1) Complete:**

1-oil products – trees . 2- groundwater 3- decreases.

**Q.2) Choose the correct answer:**

1- c / 2- a / 3- c / 4- b

**Q.3)Write scientific term :**

1- preservation. 2- sustainability.

**Q.4) Give reason for:**

1- To conserve fresh water. 2- To preserve natural resources.

**Q.5) Choose from column (B) what suits it in column (A):**

1.c 2.a 3.b

## Worksheet (5)

**Q.1) Put (√) or ( x ) :**

1- (√ ) / 2- (x) / 3- (x) / 4- (√ ) / 5- (x)

**Q.2) Choose the correct answer:**

1- b / 2- b / 3- a / 4 –b / 5-d

**Q.3) What happens if:**

It will become dirty water.

**Q.4) Give reason:**

Because fresh water is a limited renewable natural resource which is very important for all living organisms.

Q.5) Look at the following figure, then answer:

A) 1- wastewater 2- sand 3- charcoal 4- cotton 5- filtered water.

B) Water filter - harmful

## Worksheet (6)

Q.1) Put (√) or ( x ) :

1- (√ ) 2- (x ) 3-( √ ) 4-( x )

Q.2) Write the scientific term:

1- Water treatment plants. 2- Wastewater engineers. 3- Wastewater.

Q.3) Give reason for :

To make sure it is safe before the water is released to rivers and lakes or used by human.

Q.4) Choose the correct answer:

1-b 2 -a

Q.5) Complete the following:

1-water treatment –water.

2-wastewater.

3- Floods.





# Worksheets with model answer on concept (4.1)

## Worksheet (1)

### 1-Choose the correct answer

1. A boy on a slide moves down toward the ground due to the effect of…………
a. the boy's height. b. gravity.
c. friction. d. the temperature of air.

2. Gravity keeps the moon in orbit around…………………………….
a. Sun. b. Earth. c. itself. d. another moon

3. Gravitational force of Earth is affected by…………………….
a. mass and time. b. mass and distance
c. mass only. d. distance only

4. If there is no Earth's gravity, the moon would……………...
a. revolves faster around Earth b. still orbit the Earth
c. attracts to Earth. d. floats off into space

5. All the following are properties of Earth's gravity, except……………
a. it pushes objects upward. b. it affects the moon.
c. it pulls objects downward. d. it is a type of attraction force.

6. Earth attracts objects towards…………………
a. its center. b. the sky. c. the moon. d. the sun.

### 2- Write the scientific term of each of the following:

1. A force that pulls object down toward the Earth's surface.
(………………………………………………….)
2. A celestial body that orbits the Earth.
(………………………………………………….)
3. A phenomenon takes place in oceans and seas due to gravity of moon.
(………………………………………………….)



# *Worksheet (2)*

## *1-Put (√) or (×)*

1. **Magnet must touch objects to attract them. ( )**
2. **Force is the reason of motion of any body. ( )**
3. **Magnet has an invisible force called magnetism. ( )**
4. **Gravity is similar to magnetism because both of them has only pulling force. ( )**
5. **After leaving a squeezed spring, it has no force to return back to its original state. ( )**
6. **Small planets have bigger gravity than big planets. ( )**
7. **Gravity affects only on the moving objects but doesn't affect the objects at rest. ( )**
8. **Gravity is attraction or repulsion force between two objects. ( )**

## *2- Give reasons for:*

1. **Paper clips are pulled toward the magnet.**

……………………………………………………………………………………………

2. **The ball changes its direction after we throw it upwards.**

……………………………………………………………………………………………

3. **Gravity of Earth is greater than gravity of the moon.**

……………………………………………………………………………………………

## *3- What happens if…?*

1. **You squeeze a spring then leave it free.**

……………………………………………………………………………………………
……………………………………………………………………………………………

2. **There is no gravity on Earth.**

……………………………………………………………………………………………



## Worksheet (3)

### 1- Choose the correct answer:

1. ……………...force acts on all objects on Earth.

a. Gravity    b. Speed    c. Electric    d. magnetism

2. Gravity depends on the…………………… of a body.

a. speed    b. mass    c. length    d. age

3. A table stands on the ground needs……………to move.

a. sunlight    b. mass    c. force    d. air

### 2- Put (V) or (X):

1. All objects on Earth's surface is affected by magnetism force. (   )
2. Gravity of Earth push objects towards its center. (   )
3. The direction and mass of an object are changed due to gravity. (   )
4. Any object on Earth's surface is affected by repulsion force of gravity(   )

### 3- Complete the following sentences using words below:

(Direction - gravity- center - pulling)

1. The direction of Earth's gravity is always toward………………… of Earth.
2. The force of gravity is always…………… force, and it changes the……………… Of movement.
3. Any object has……………………depending on its mass.



# Worksheet (4)

## 1- Complete the following sentences:

1. A magnet has………….. force that attracts and pulls metal objects toward it.
2. A parachute in air is affected by……………………. that acts against the……………… force of Earth.
3. A person can control the speed of his bike by using…………….. to slow down its movement.
4. The force that arises between the bicycle brake and the tires is called……………...which slows down the movement of the bicycle.
5. Air resistance is a type of……………… force.
6. The direction of………………… force opposes the direction of a body moves through air.
7. The attraction force between the Sun and Earth is……………… than that between Earth and the moon because the Sun has………………mass.

## 2- Write the scientific term of each of the following:

1. The force that slows down the movement of objects through air.

   (…………………………………………………)

2. The force by which metals are attracted or pulled to a magnet.

   (…………………………………………………)

3. A type of friction force that opposes the movement of an object as it passes through air. (…………………………………………………)
4. 
5. The tool that is used by skydiver to slow his drop.

   (…………………………………………………)



## 3- Give reasons for:

1. Skydiver opens his parachute during landing.

……………………………………………………………………………………

2. When you press the bicycle brake, its speed will stop moving after few seconds.

……………………………………………………………………………………

3. Some iron nails are attracted to a magnet.

……………………………………………………………………………………

# Worksheet (5)

## 1- Put (✓) or (x):

1. Air resistance is a factor that speeds up the falling objects toward the Earth. (        )
2. All objects on Earth's surface are affected by gravity force which pulls objects downward. (        )
3. There is no air in space so, air resistance slows down the movement of objects through space. (        )
4. If there is no air resistance on Earth, all objects will reach the Earth's surface at the same moment when dropping them from the same height. (        )
5. Air resistance force acts in the opposite direction of gravity force. (        )
6. Heavier objects reach Earth's surface before smaller objects due to the effect of air resistance which affects their movement. (        )
7. Air resistance is a type of pulling force. (        )



## 2- Complete the following sentences using the words below:

(Law of Motion - slows down - gravity- air resistance - longer - shorter - constant)

1. The force that pulls objects down toward Earth's surface is called…………………
2. When the skydiver opens his parachute the force of…………………makes its speed……………………
3. When throw a plastic ball with holes from 5-meter height, it will take……….….… time to reach the ground while a paper clip takes……………… time when it is thrown from the same height.
4. The law which states that the force of gravity is…………. and acts on all objects in the same way is called……………………….……

# Worksheet (6)

## 1- Choose the correct answer:

1. The force of…………………….. keeps the planets on their paths around the Sun.

a. air resistance b. friction c. gravity d. electricity

2. Gravity is……………………………….force that holds all objects in their places.

a. visible pulling b. visible pushing
c. invisible pulling d. invisible

3. The planets revolve around the Sun in fixed…………….. orbits.

a. oval b. irregular c. rectangular d. triangular

4. The speed of Earth's revolution around the Sun is nearly……………… km per hour.

a. more than 100,000 b. more than 200,000
c. less than 100,000 d. less than 50,000

5. …………………………is (are) the center of the solar system.

a. The Earth
b. The Sun
c. The moon and Earth
d. The Sun and Earth

***2- Put (V) or (x):***

1. The Sun revolves around Earth. ( )
2. The planets revolve around the Sun by the effect of gravitational pushing force. ( )
3. Gravity is an attraction force that can be seen easily. ( )
4. The orbit of each planet has an ellipse shape. ( )
5. The Earth's gravity keeps all planets in their orbits. ( )
6. The scientist Nicolas Copernicus stated that Earth revolves around the Sun. ( )

## Worksheets with model answer on concept (4.2)

## Worksheet (1)

**1- Choose the correct answer**

1. The imaginary line that passes through Earth's center is called
a. the day. b. the axis. c. the night d. the pole.

2. The orbiting of an object around another object is called
a. revolution. b. spinning. c. rotation. d. speed.

3. the appears in the ………….. during early morning .
a. east b. west c. north d. south

**2-Complete the following sentences using the words below:**

(The center of the sky Earth - east - axis - 24 hours – earth )

1. Occurrence of day and night is due to the rotation of……..on its…………..
2. Earth completes one rotation on its axis once every………..
3. In the early morning the Sun appears in ……………. while at noon it appears In……………….

## 3- Give reasons for:

1. Occurrence of day and night.

…………………………………………………………………………

…………………………………………………………………………

2. Half of Earth appears dark at night.

…………………………………………………………………………

…………………………………………………………………………

3. The Sun appears as it moves across the sky.

…………………………………………………………………………

…………………………………………………………………………

## 4- What happens if ..?

1-Earth doesn't rotate on its axis.

…………………………………………………………………………

…………………………………………………………………………

2-Half of Earth faces the Sun.

…………………………………………………………………………

3-Earth completes its spinning on its axis in 12 hours only.

…………………………………………………………………………

…………………………………………………………………………



# Worksheet (2)

## 1-Complete the following sentences using the words below

**(Jupiter- cycle -Sun)**

1. Earth's revolution around the………………..... causes the cycle of seasons.
2. The fastest rotating planet in the solar system is………………
3. The series of events that are repeated in the same order is called……………

## 2- Choose from column (B) what suits it in column (A):

| (A) | (B) |
|---|---|
| 1. Jupiter<br>2. Earth<br>3. The Sun | a. is the center of the solar system.<br>b. is the fastest planet that rotates on its axis<br>c. is the planet that completes one cycle on its axis in 24 hours.<br>d. is the path in which planets revolve around the Sun. |

1. …… 2. ……. 3. …………

## 3-Write the scientific term of each of the following:

1. The fastest planet during its rotation on its axis.

………………………………………………………………………

2. The time taken by Earth to complete one rotation on its axis.

……………………………………………………………………

3. A phenomenon occurs due to Earth's revolution around the Sun.

………………………………………………………………………..

## 4- choose the correct answer :

1- In Egypt the cities in ……… see the sunrise before the cities in……..

a. east – west b. west – east c. north – south d- south – north

2- the earth's axis is …………………..

a. vertical b. horizontal c. circular d. real



3-the space craft that orbits earth takes about …………..to make one turn around earth .

a. more than 3 hours

b. more than one hour

c. Less than 2hours and more than one hour

d. Less than one hour and more than half an hour

## Worksheet (3)

**1-Complete the following sentences**

1. Earth's rotation on………………..causes the Sun seems to rise in........direction and sets in…………….. direction.
2. Formation of…………………of objects is due to movement of ……. across the sky.
3. The first time piece that is used by ancient Egyptians to know the time is called……………………
4. The position of the Sun in the sky affects……………….. and………..... of shadows of objects.
5. In morning and…………. the Sun forms longer shadow of an object.
6. At noon the Sun forms……………..shadow of an object.



## 2-Choose from column (B) what suits it in column (A):

| (A) | (B) |
|---|---|
| 1. Day and night phenomenon<br>2. Four seasons phenomenon<br>3. Formation of shadows | a, occurs due to the movement of the Sun in the sky.<br>b. occurs when Earth completes one cycle on its axis.<br>C. Occurs due to the revolution of the moon around Earth.<br>d. occurs due to the revolution of Earth around the Sun. |

## 3-Put (√) or (x):

1. Earth rotates on its axis at low speed. (   )
2. We can feel the movement of Earth easily. (   )
3. All objects on Earth's surface move with the same speed of Earth. (   )
4. Movement of objects in the sky is due to the Earth revolution around the Sun. (   )
5. The position of the shadow of Cairo Tower will not change during the day. (   )



# Worksheet (4)

## 1. Choose the correct answer

**1. The group of stars that make a certain shape in the sky is called………..**

**a. solar system. b. universe. C. constellation. d. ecosystem.**

**2. Constellation appear ………..... in the sky during the year.**

**a. at different positions b. at the same position**

**C. in winter only d. in summer only**

**3. All the following are from the properties of constellations, except.**

**a. they consist of stars and planets.**

**b. they change their positions throughout the year.**

**C. they seem to move across the night sky.**

**d. they can form certain shapes in the sky.**

**4. Every night, we can see new stars appear from ... direction.**

**a. north b. south C. east d. west**

**5………..are celestial bodies that make their own light.**

**a. Moons and planets b. The Sun and stars**

**C. The Sun and planets. D. Earth and the sun**

## 2. Correct the underlined word:

**1. Constellation consists of a group of planets that form a pattern. ( ………..)**

**2. Every night, new stars appear from west. (……………………)**

**3. Jupiter revolves around the Sun in a rectangular orbit. (……………..)**



# Worksheet (5)

## 1-cross the odd word :

1- Crescent – shadow – full moon – gibbous

2- Moon – sun – earth – Jupiter .

## 2-write the scientific term :

1- Dark object revolve around the earth and reflect the sun light . (…………………………)

2- The moon phase at which moon seems completely dark .

(…………………………)

3- The moon phase at which moon seems completely bright . (…………………………)

4- The moon phase at which one edge only appears bright

(…………………………)

## 3- Complete the following :

1- Through the month, we can see different ……………….. of the moon in the sky .

2- The moon orbits …………….and both of them orbit ……………..

3- All moon phases are repeated every ………….

4- At……………… phase , the moon appears completely shining in the sky at night .



# Worksheet (6)

## 1. Complete the following sentences using the words below:

**(Galaxy - atmosphere - universe)**

1. The wide space that contains celestial objects is called.

2. A protective layer around Earth that allows some light waves pass to Earth and blocks other light waves is called

3. Group of stars, planets and gases held together by gravity is called

## 2-Write the scientific term of each of the following:

1. It contains the Sun, eight planets and more than 200 moons. (…………………….)

2. The scientist who discovered that the Sun is the center of our solar system. (……………………….)

3. The scientist who discovered that how the Sun converts matter directly into energy. (…………………….)

4. It is a medium-sized star that provides us with heat and light. (………………….)

5. They are giant spheres of superhot gases most of them are hydrogen and helium. (……………………....)

6. It is a group of stars, planets and gases held together by gravity. (……………………….)

7. It is a wide space that contains celestial bodies as stars, galaxies, comets, meteors and satellites. (……………………..)



8. It is a protective layer around the Earth that allows some light waves to pass and blocks others. (…………………….)

**3- Choose from column (B) what suits it in column (A):**

| (A) | (B) |
|---|---|
| 1. Albert Einstein<br>2. Copernicus<br>3. The Sun | a. Orbits around Earth.<br>b. Locates at the center of the solar system.<br>c. Proved that the Sun is the center of the solar system.<br>d. Explained how the Sun converts matter directly into energy. |

**4-Write the scientific term :**

1- Scientists that manage the planetarium buildings . (……………………….)

2- A special buildings with dome ceiling and used to see image of celestial bodies (……..……………………..)



# Model answer on concept (4.1)

## Worksheet (1)

**1- choose**

**1. b 2. b 3. b 4. d 5. a 6. a**

**2- Write scientific term**

**1. Gravity. 2.The moon. 3. The ocean tides.**

---

## Worksheet (2)

**1 - Put (V) or (x)**

**1. (x) 2. (✓) 3. (✓) 4. (x) 5. (x) 6. (x) 7. (x) 8.(X)**

**2- Give reason**

1. **Because of the force of magnetism.**
2. **Because gravity force always pulls it downwards.**
3. **Because the mass of Earth is greater than the mass of the moon.**

**3- What happen**

1. **The spring will be pushed back when you leave it free.**
2. **All objects on its surface will float off into space.**

---

## Worksheet (3)

**1- Choose**

**1. a 2. b 3. c**

**2- Put (V) or (x)**

**1. (x) 2. (x) 3. (x) 4. (x)**

**3- Complete**

**1. Center 2. Pulling – direction 3. Gravity**

## Worksheet (4)

### 1- Complete

1. Magnetism 2.air resistance – gravity

3.Brake 4. Friction 5. Friction 6. air resistance 7. bigger – bigger

### 2- Write scientific term

1. Air resistance. 2. Magnetism. 3. Air resistance. 4. Parachute.

### 3- Give reason

1. To slow down his speed due to air resistance.
2. Because the brake produces friction force
3. Because magnetism force pulls them to the magnet.
4.

## Worksheet (5)

### 1- Put (V) or (x)

1. (x) 2. (✓) 3. (x) 4. (✓) 5. (✓) 6. (✓) 7. (x)

### 2- Complete

1. gravity. 2.air resistance - slows down. 3. longer-shorter

4.constant-law of motion

---

## Worksheet (6)

### 1- Choose

1. c 2. c 3. a 4. a 5. b

### 2- Put (V) or (x)

1. (x) 2. (x) 3. (x) 4. (✓) 5. (x) 6. (✓)



# Model answer on concept (4.2)

## Worksheet (1)

**1- Choose the correct answer**

**1. (b) 2. (a) 3. (a).**

**2-Complete the following sentences using the words below:**

**1-Earth - axis 2-24 hours 3-East - The center of the sky Earth**

**3-Give reasons for:**

**1. Due to the rotation of Earth on its axis.**

**2. Because it doesn't receive sunlight.**

**3. Due to the rotation of Earth on its axis.**

**4-What happens if….?**

**1. Phenomenon of day and night will not happen.**

**2. This half has day.**

**3. Day and night phenomenon happens.**

---

## Worksheet (2)

**1-Complete the following sentences**

**1-sun 2-jupiter 3-cycle**

**2-Match**

**1-b 2-c 3-a**

**3-Write the scientific term of each of the following:**

**1. Jupiter. 2. Day 3. Four seasons.**

**4-choose the correct answer :**

**1- a 2- a 3- c**

## Worksheet (3)



## 1-Complete

1. its axis east- west 2. Shadows - the Sun 3. sundial.

4. the length angles 5. Afternoon 6. shorter

## 2-Match

1-b 2-d 3-a

## 3-Put (√) or (×)

1. (X) 2. (×) 3. (√) 4. (×) 5. (×) 6. (×) 7. (√)

---

# Worksheet (4)

## 1- Choose the correct answer

1. c 2. A 3. A 4. C 5. B 6. B 7.c

## 2-Correct the underlined word:

1. Stars 2. East. 3. An oval

# Worksheet (5)

## 1-cross the odd word :

**1-shadow 2- sun**

## 2-write the scientific term :

**1-Moon 2- new moon phase 3- full moon 4- crescent**

## 2-Complete the following :

**1-Phases 2- earth – sun 3- month 4- crescent**



# Worksheet (6)

## 1-Compete:

1- Universe 2- atmosphere 3- Galaxy

## 2-Write the scientific term of each of the following:

1. The solar system. 2. Copernicus. 3. Albert Einstein.
4. The Sun. 5. Stars. 6. Galaxy.
7. The universe. 8. The atmosphere.

## 3-Match

1-d 2-c 3-b

## 4-Write the scientific term :

1- Planetarium director 2- Planetarium

# Sheet (1)

## Choose the correct answer:

1. Which of the following is a part of the biosphere?

   a) Ice b) clouds c) water d) animals

2. ------ is known as the lithosphere.

   a) biosphere b) atmosphere c) geosphere d)hydrosphere

3. groundwater present under the Earth's surface and soil porous, this is an interaction between -----

   a) hydrosphere – geosphere c) biosphere-atmosphere

   b) geosphere – atmosphere d) hydrosphere – biosphere

4. 96.5% of earth's water is ---------.

   a) Salty b) evaporating c) fresh d) boiling

**Give reasons why some ponds and lakes may dry up in some months.**

## complete the following statements:

(air resistance – wetland – gravity – geosphere – biosphere – surface – center)

1- A rat that digs a burrow in the soil is an interaction between lithosphere and ------------------.

2- The land that is partially covered with water is called -----------------.

3- Any object on Earth has ------------ depending on its mass.

4- The direction of gravity is always towards its ---------------.

## Put (√) or (X):

1. Rivers and streams are still freshwater bodies. ( )
2. All parts of Earth receive sunlight at the same time. ( )
3. Earth revolves around the sun in a fixed path. ( )
4. Cotton can be used to filter wastes from wastewater. ( )
5. Wastewater engineers are scientists that work in the planetarium who design the programs that are used to study the celestial bodies. ( )

**What happens if the Earth stops spinning around its axis?**

## Write the scientific term:

1. The action of control reaching of humans to control reaching of humans to natural resources or using them. ---------------
2. The phase of the moon in which the whole face of the moon faces the sun, and the other half faces the Earth --------------
3. The giant spheres that are made out of superhot gases, most of them are helium and hydrogen. --------------
4. The force by which a magnet attracts magnetic materials towards it. ---------------
5. It contains the sun in its centre, 8 planets and 200 moons. --------------
6. An imaginary line that passes through the two poles of Earth. ---------------

# sheet (2)

**what happens when water collects in a low-lying area?**

Write the scientific term:

1- The land that is partially covered by water. ----------------------
2- The water that has been already used before. ----------------------
3- The wide extended space that contains all celestial bodies. ----------------------
4- The action of manage resources to use them in the way that doesn't affect the future supply. ----------------------
5- The force that changes the direction of throwing objects up. ----------------------

Put (√) or (X):

1- If there is no hydrosphere, the biosphere will not exist. ( )
2- We can observe the moon and the sun at night. ( )
3- If we drop a paper and a feather from the same height, they will fall down at the same time. ( )
4- Our solar system contains thousands of stars. ( )
5- Placing cows in many small grass areas is considered as sustainable situation. ( )

**What happens to the gravity of the sun if its mass decreases?**

## choose the correct answer:

1- All the following are used to filter wastewater except ----

a) Cotton  b) wood  c) charcoal  d) sand

2- Most of freshwater found in earth in the form of ------

a) Streams  b) rivers  c) groundwater  d) glaciers

3- In late afternoon, the sun appears in the ------- direction of the sky.

a) East  b) west  c) north  d) south

4- Mountains and valleys are considered as a part of ------

a) Biosphere  b) atmosphere  c) geosphere  d) biosphere

5- If there is a repulsion force between 2 magnets, so they will move ----

a) Away from each other  c) towards each other

b) To Earth's surface  d) to the space

## Match;

| A | B |
|---|---|
| 1. Constellation | a) Any body that swims |
| 2. Air resistance | b) A group of stars that rotate together in space by gravity. |
| 3. International space station | c) Any body that swims in space such as stars, comets, planets |
| 4. Galaxies | d) Rotates around the earth one every 90 min. |
| 5. Celestial bodies | e) A group of stars form a certain shape. |

1. --------  2. --------  3. --------  4. --------  5. --------

# sheet (3)

## choose the correct answer:

1. We can see thousands of ---- in the sky that give off light and heat.
   a) Moons b) stars c) planets d) satellites
2. The fastest planet that rotates around the sun is -----
   a) Earth b) mercury c) Venus d) Jupiter
3. All the following are characteristics of abyssal zone except ----
   a) They are very deep areas c) they get much light
   b) Thet don't get sunlight d) they don't have many animals
4. If there is no air resistance and we drop an iron cube and a wooden cube at the same time from the same height they will -----
   a) Reach the floor at the same time c) reach the floor at different times
   b) Move upwards against the gravity d) be affected by magnetic force
5. Water that covers most of the Earth's surface is ---
   a) Salty in rivers c) fresh in glaciers
   b) Frech in groundwater d) salty in oceans

## Put (√) or (X):

1. Both catfish and dolphins adapt in streams. ( )
2. Magnetism is a force that attracts metal objects by pulling on them. ( )
3. Air resistance force acts in the opposite direction of gravity force. ( )
4. The sun is the biggest star in the universe. ( )
5. About three quarter of Earth surface is covered with mountains. ( )

**What happens to the shadow of an object if the sun locates at east or west in the sky?**

write the scientific term:

1. The large are of land that have the same weather, soil, and wildlife. ------------------
2. The phenomenon that occurs due to Earth's rotation on its axis. ------------------
3. The phenomenon that occurs due to earth revolution around the sun. ------------------
4. The phenomenon that occurs due to the gravity and movement of the moon. ------------------
5. Water bodies that surround the continents. ------------------

**Give reasons why water affects both living and non-living organisms.**

Complete the following statement:

1. The sun affects ---------------- and ----------------- of the shadows of objects.
2. The earth is surrounded by ------------------- that allows some light waves to pass through and block others.
3. If the mass of the moon increases than its real mass, its gravitational force -----------.
4. The gravity between sun and mercury is ---------------- than the gravity between sun and Earth.

**Give reasons the sky diver opens his parachute during landing?**

## sheet (4)

### Put (√) or (X):

1. Changing the location of shadows of objects on earth proves that Earth revolves around the sun. (   )
2. Constellations have similar shapes and locations in the sky. (   )
3. Some telescopes cannot observe the distant celestial bodies v=because of the presence of atmosphere that blocks some light. (   )
4. Oceans and seas circulate in patterns called ocean currents. (   )
5. Gravity pushes objects towards the center of the Earth. (   )

### Write the scientific term:

1. The force that opposes the motion of a body across a surface or liquid or a gas. ------------------
2. The system that includes all living organisms such as micro-organisms, plants, animals, and humans. ------------------
3. The type of water that forms 3.5% of water on Earth. ------------------
4. A land that is partially covered with water. ------------------
5. The group of stars, and celestial bodies held together by gravity. ------------------

**What happens if water leaked into Earth through a layer of porous rocks?**

## Choose the correct answer:

1- The appearance of constellation Orion in the sky is evidence of ---

a) Rotation of earth on its axis and around the sun.
b) Constellation of stars in the sky is geometrical figures.
c) Rotation of the moon around its axis and around the sun.
d) Apparent motion of the sun due to the rotation of Earth on its axis

2- Groundwater is present under Earth's surface in rock and soil pores. This is an interaction between ------

a) Hydrosphere and biosphere
b) Geosphere and hydrosphere
c) geosphere and biosphere
d) atmosphere and geosphere

3- The force that affecting the moon to orbit the Earth is -----

a) Earth's gravity
b) Moon's gravity
c) sun's gravity
d) earth's magnetism

4- ------ and ------ are among the swamps.

a) Swamps – ponds
b) Ponds – oceans
c) marshes – bogs
d) swamps – estuaries

5- The cycle of day and night is due to ------

a) Rotation of earth around its axis
b) Vibration of earth
c) Revolution of earth around the sun
d) revolution of moon around sun

6- Earth rotates ----- on its axis.

a) Clockwise
b) anticlockwise
c) from north to south
d) from south to north

## Write the scientific term:

1- The law that states that the force of gravity is constant and acts on all objects in the same way. ---------------------

2- The area along the coast that appears at low tides and disappears at high tides. --------------------

3- A zone that is located in deep areas of oceans. --------------------

4- The force that attracts paper clips to the magnet. --------------------

5- A water form that is formed when water is collected in low land. --------------------

**Give reasons why constellations appear to be moving in the sky.**

Complete the following statements:

1. ------------- and -------------- cannot make their own light.
2. People use -------------- to determine the ------------------- of Earth.
3. according to water movement, pond have ----------- water compared to oceans that have -------------- water.
4. ---------------------- are scientists that work in water treatment stations that work on removing wastes from wastewater.
5. Shallow areas contain ------------------ and ---------------------
6. -------------------- deceases the speed of parachute during its landing.
7. Earth revolves around its axis and the angle of ------------ changes throughout the year.

**Give reasons for the occurrence of different sunrise and sunset times each day on Earth?**

## Sheet (5)

Choose the correct answer:

1. If the moon's mass is doubled, -------
   a) Its distance away from Earth is doubled.
   b) The moon may collide with Earth.
   c) It attracts the Earth
   d) it goes away from Earth.
2. Catfish can survive in --------- water environment.
   a) Salt and still
   b) Salt and current
   c) fresh and fast
   d) fresh and still
3. The group of stars that make a certain shape in the sky is called -----.
   a) Solar system
   b) Universe
   c) constellation
   d) ecosystem
4. An estuary is formed when ------ meets with -------.
   a) Sea – ocean
   b) Groundwater – river
   c) river – stream
   d) stream – ocean
5. The parachute helps in -------.
   a) Increasing the speed of the object by decreasing the air resistance
   b) decreasing the speed of the object by increasing the air resistance
   c) Increasing the speed of the object by increasing the air resistance
   d) decreasing the speed of the object by decreasing the air resistance

**what happens if animals that live in the lake dries up?**

**Give reasons why water is a renewable resource?**

Put (√) or (X):

1) constellation can be seen and unseen in some places. ( )
2) Air resistance increases the speed of the parachute. ( )
3) The sun is the biggest star in the universe. ( )
4) Air resistance acts in the opposite direction of gravity. ( )
5) Both catfish and crayfish live in streams. ( )

**Give reasons why no animals can survive in the abyssal zones?**

Write the scientific term:

1- The celestial body that revolves around the sun in fixed orbits. ---------------
2- The phenomenon that occurs due to movement of the moon. ---------------
3- The water that may contain fresh or salty water. ---------------
4- The space craft that revolve around the earth each 90 minutes. ---------------
5- The water that has been used before. ---------------
6- The scientists that work in the planetarium and design programs for people to learn about celestial bodies. ---------------

**What happens if the Earth's gravity disappears?**

## Complete the following:

1. The direction of earth is always towards the -------------- of Earth.
2. The force that opposes the movement of objects as they pass through the air is called ------------------.
3. The amount of freshwater is ----------- than the amount of salty water.
4. ------------, -------------, and -------------- are used to make simple water filter.
5. All moon phase are repeated every --------------.
6. --------------- and -------------- are the superhot gases that make the stars.
7. ---------------- and ------------- survive in freshwater.
8. Intertidal zones appear at ------- tide and disappears at --------- tide.
9. At noon, the sun forms ------------- shadows of an object.
10. The first timepiece that is used by ancient Egyptians to know the time is called ----------------.
11. Stars seem bright because they are made of ---------------.
12. The moon orbits --------------, and both of them orbit ------------.
13. At --------------- phase, the edge of the moon is illuminated (bright).

**What happens if half of the moon faces the sun?**

## Sheet (6)

### Choose the correct answer:

1- Which of the following can happen if there is no gravity between the sun and the planets?

a) Planets remain in a constant orbit.
b) Planets stop moving in space.
c) planets move in space randomly.
d) all the previous.

2- Which of the following doesn't belong to Earth's biosphere?

a) Plants b) bacteria c) rivers d) catfish

3- The stars farther than the sun appear to us -----

a) Bigger b) brighter c) smaller d) a and b

4- A watershed is an area where water ------

a) Runs in the same country
b) Has the same speed and direction
c) has the same temperature
d) flows into a common waterbody

**Give reasons the moon phases change during the month.**

### Complete the following statements:

1- ------------ contains a mixture of fresh and salty water.

2- The tides phenomenon is caused by the gravitational force of -------.

3- The cycle of -------------- occurs due to the revolution of the earth around the sun.

4- The path in which planets move around the sun is called -----------.

5- At the middle of the lunar month, the moon's face is completely bright and this phase is called -------------.

**What happens to gravity when the distance between two objects increases?**

## Put (√) or (X):

1- All organisms need water to survive. ( )
2- The gravity of the moon is greater than the gravity of the Earth. ( )
3- Constellations help us to know the 4 main directions. ( )
4- Gravity is considered a pushing and a pulling force. ( )
5- At full moon phase, we don't see the moon completely. ( )
6- Magnetic force is a pushing and a pilling force ( )

**Give reasons why the Earth seems like a blue marble from space.**

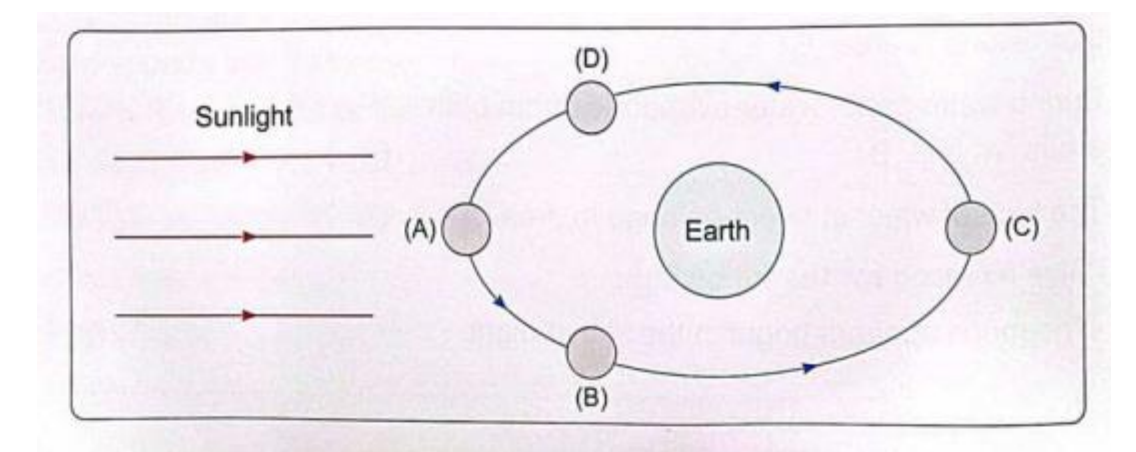
## Write the scientific term:

1. The shape of the moon changes through the lunar month. ---------------
2. A small water stream that moves towards a common water flow. ---------------
3. A tool used by ancient Egyptians depends on the change of shadow throughout the day to tell the time. ---------------
4. Scientists who are responsible for studying the properties and behaviors of celestial bodies in space at planetarium. ---------------
5. The moon phase at which on edge of moon appears bright. ---------------

**Give reasons although the Earth rotates around its axis, we don't feel its movement.**

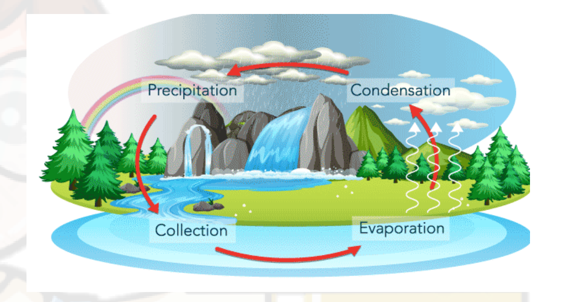
## Sheet (7)

Look at the following figure then choose the correct answer:




1. The celestial body that revolves around Earth in this figure is (the moon – the sun – Jupiter)
2. The moon phase at position (A) is (full moon – new moon – crescent)
3. The moon phase at position (C) is (full moon – new moon – crescent)

Look at the following figure then complete the sentences below:




1. This figure represents ------------ in nature.
2. The energy which plays an important role in this figure is the ----------- energy.
3. The process that takes place in this figure is similar to the ------------ process which takes place in water treatment plants.
4. The scientists responsible for doing this process inside the water treatment plants are called ---------------------.

## Look at the opposite figure then answer:



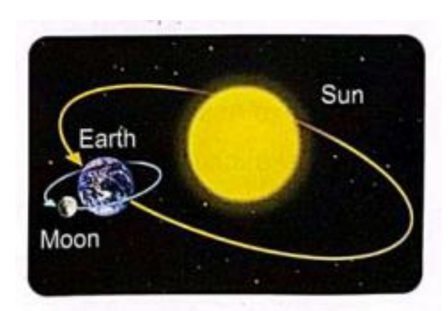
1. This place is called -----------.
2. The ceiling of this place has the shape of a -----------.
3. The scientists who work there to study the behaviour of celestial bodies are called ------------------.
4. This place is located in Egypt. (   )

## look at the following watershed map that shows a river and its tributaries, then choose the correct answer:




1. If there is a factory built near area (A), water in area ------ will be polluted due to factory waste.
   ( B only – B and D only – B, C, and D)
2. If ------- is built near area (B), the amount of water in other areas will change.
   (factory – trash dump – dam – farm)
3. If there is ------ in area (C), floods may happen in other areas.
   (less rainfall – more rainfall – drought – wind)
4. The type of water found in areas (A), (B), and (C) is ---
   (freshwater – salty water – mixed water – frozen water)

Study the opposite figure, then choose the correct answer:

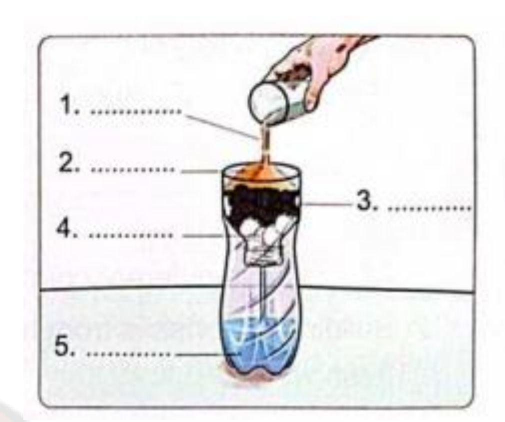



1- The (moon – sun – earth) has the largest mass.

2- The (moon – sun – earth) has the smallest gravity.

3- The (moon – sun – earth) is the center of the solar system.

look at the opposite figure then label it:




1- -----------

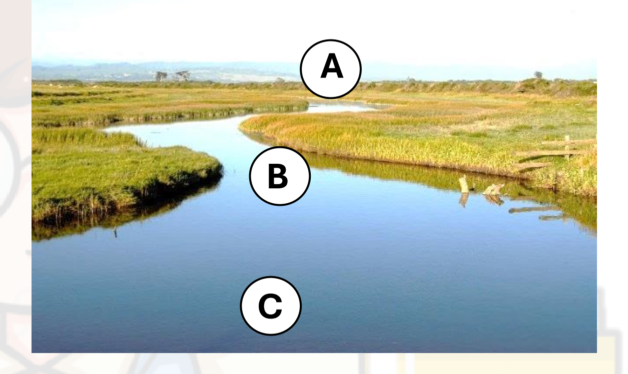
2- -----------

3- -----------

4- -----------

5- -----------

Look at the following picture, in which area (A) shows a river, and area (C) shows an ocean, then choose the correct answer:




(1) Area (B) represents (pond – lake – estuary).

(2) Water lilies can be found in (area A – area C – area B and C)

(3) All the following organisms are found in area C except (frog – dolphin – flounder fish).

## Sheet (8)

**Put (√) or (X):**

(1) We can drink the water of Lake Assal. ( )

(2) Earth systems are not interacting with each other. ( )

(3) The scientist Copernicus proved that the Earth is the center of the solar system. ( )

(4) Placing cows in many small grass areas is considered a sustainable situation. ( )

(5) Our solar system contains one planet and 8 stars. ( )

(6) The international space station is a type of man-made satellites. ( )

(7) Galileo binoculars help scientists to see distant objects in space with more details. ( )

**give reasons why the atmosphere limits the use of some telescopes to see distant celestial bodies.**

The opposite figure represents a pattern that we see in the sky:




1. This figure represents a constellation called -----------.
2. This constellation looks like a mythical ------
3. **Give reasons why the position of constellations seems to be changing.**

## choose the correct answer:

1- The area of land where all water flows to a common location is called ---

a) Tributary b) estuary c) wetland d) watershed

2- The amount of salt water on Earth is ----- the amount of freshwater.

a) Larger than b) smaller than c) equals d) half

3- We cannot send astronauts to study stars because they are ----

a) So cold b) faraway c) too small d) too large

4- In Egypt, the cities in ----- see the sunrise before the cities in ----

a) East – west b) west – east c) north – south d) south – north

5- At the end of the Nile River Delta, there is a/an ---- between the Nile River and the Mediterranean Sea.

a) Lake b) wetland c) estuary d) ocean

## Write the scientific term.

1. The imaginary line that passes through the two poles of Earth. --------------------
2. The sun and eight planets revolve around it. --------------------
3. The wide space that contains all celestial bodies, --------------------
4. The action of control reaching humans to natural resources or using them as in natural protectorate. --------------------
5. The process in which the small particles of rocks are transported from one place to another. --------------------
6. It's a group of stars, planets, moons, and gases held together by the effect of gravity. --------------------

## Sheet (9)

### Write the scientific term:

1) The law which states that the force of gravity is constant and acts on all objects in the same way. ----------------
2) An area of ocean that contains coral reefs and intertidal zones. ----------------
3) An area of land where all water flows to a common location usually a sea or an ocean. ----------------
4) The moon phase at which its edge is bright. ----------------
5) The moon phase at which its edge is dark. ----------------
6) It's a pull or push that affects an object. ----------------

**What happens to the freshwater of a river when it meets the salty water of a sea?**

### Correct the underlined word:

1) Plastic is made from <u>the wood of trees.</u> ----------------
2) During the water cycle in nature, water evaporates forming <u>rainwater</u>. ----------------
3) The moon <u>absorbs</u> sunlight. ----------------
4) The <u>Earth</u> is located in the center of the solar system. ----------------
5) Nitrogen gas is a part of the <u>geosphere</u>. ----------------
6) The sun forms the shortest shadow of an object in the <u>early morning.</u> ----------------

**Give reasons for the occurrence of day and night phenomenon.**

Choose the correct answer:

1. The water cycle in nature is considered an example of ---- water.
   a) Recycling b) preservation of c) overusing d) conservation of
2. Humans can use water for all the following purposes except -----.
   a) Fishing b) getting electricity c) transportation d) rock weathering
3. Constellations appear ------- in the sky during the year.
   a) At different positions c) at the same positions
   b) In winter only d) in summer only
4. Rocks are broken down by water during ---------- process.
   a) Photosynthesis b) weathering c) erosion d) respiration
5. ------- is the moon phase at which we can see more than half of the moon face is illuminated.
   a) First crescent b) second crescent c) gibbous d) new moon

**What happens if a trash dump is built near a tributary?**

Complete the following statements:

1- The sun is made of superhot gases most of them are ------- and -------
2- The great gravity of ----------- keeps the planet in their orbits,
3- A constellation consists of a group of ----------- that form a pattern.
4- The sun movement across the sky affects ------- and ------ of shadows.
5- The first timepiece uses the shadow change is called ------------.

## Give the reason.

1- Water is important for all plants on the Earth.
   Because all plants need water to grow and survive
2- Water can affect nonliving things like rocks.
   Because water can cause weathering and erosion of rocks
3- Our planet looks like a blue marble from space.
   Because around 71% of Earth are covered by water
4- Water that forms the hydrosphere is one of the renewable resources on Earth.
   Because water can be replaced in nature through the water cycle
5- Hiding of worms inside the soil is an example of interaction between two Earth's spheres.
   Because worms belong to biosphere while soil belong to geosphere
6- Importance of atmosphere for plants for making their food
   Because plants take in carbon dioxide gas from air during photosynthesis process
7- Most of the fresh water on Earth cannot be used for drinking.
   Because most of the fresh water on Earth are in the form of frozen water
8- Some ponds and lakes may dry up during some months.
   Because of the hot months in summer that makes water evaporates fast

9- No green plants can survive in the abyssal zones of oceans.
Because sun light doesn’t reach abyssal zones which is important for the plants to make their food

10- We must conserve fresh water.
Because the amount of fresh water on Earth is limited

11- You should turn off the water tap during brushing your teeth.
To conserve fresh water

12- Ground water is called by this name.
Because it is stored in the cracks and spaces of underground rocks

13- The quality of fresh water affects the life of living organisms living in it.
Because poor quality of freshwater leads to the death of many living organisms and the extinction of some species live in water

14- Scientists recycle fresh wastewater to get filtered water again.
Because fresh water is limited and very important for living organisms

15- Farms near tributaries may cause water pollution
Due to using of chemical fertilizers that cause water pollution

16- Countries prevent using or developing natural resources in some protected areas of land
To preserve natural resources

17- Wastewater engineers test the treated water
To make sure it is safe before it is used by humans

18- The moon is attracted to Earth.
Due to the gravitational force between them

19- The gravity between two objects is affected by the distance between them
Because when distance between them decreases, the gravity increases and vice versa

20- The force of gravity has an important role in the solar system.
Because gravity between sun and planets keeps the planets revolve in fixed orbits

21- Paper clips are pulled toward the magnet.
Due to the force of magnetism

22- The ball changes its direction after we throw it upwards.
Because the gravity pulls it downward

23- Gravity of Earth is greater than gravity of the moon
Because the mass of Earth is greater than the mass of the moon

24- Skydiver opens his parachute during landing.
To slow down his speed on landing due to air resistance

25- When you press the bicycle brake, its speed will stop moving after a few seconds
Because the brake produces friction force that slows the movement until it stops

26- Some iron nails are attracted to a magnet.
Due to the force of magnetism





27- Air resistance affects the movement of an object which falls from a height.
Because it slows it during falling

28- A paper sheet takes longer time to reach Earth’s surface than a paper clip if they are thrown from the same height
Because the paper sheet has more surface area so it has more resistance and takes longer time than paper clip

29- Planets revolve around the sun in fixed orbits.
Because of the gravitational force between the sun and the planets

30- Occurrence of day and night
Because of the rotation of Earth on its axis

31- Half of Earth appears dark at night
Because it doesn’t receive sunlight

32- The sun appears as it moves across the sky
Because of the rotation of Earth on its axis

33- Occurrence of seasons
Because of the revolution of the Earth around the sun

34- Occurrence of different sunsets and sunrise times each day on Earth
Because earth is slightly tilted on its axis and revolves around the sun in oval orbit

35- Although Earth rotates on its axis, we don’t feel its movement
Because we are moving with the same speed of Earth




36- The length of the shadow of an object changes throughout the day
Because of the change of position of the sun in the sky

37- In the night sky, some stars seem to rise and set like the sun
Because of the rotation of Earth on its axis

38- The moon appears bright in the sky at night
Because it reflects the sunlight

39- If we are travelling in desert stars may help us to determine our correct way across the desert
Because the location of the constellations in the sky during the year help us to determine the main directions of Earth

40- The sun looks much larger to us than other stars
Because the sun is the closest star to the Earth

41- Atmosphere limits the using of some telescopes to see distant celestial bodies
Because atmosphere allows some light waves to pass to the Earth and blocks others

42- Stars appear bright at night
Because stars produce light

43- The moon has different phases in the sky

Due to

the Earth's revolution around the sun

The Moon revolution around the Earth

Both the Earth and moon revolution around the sun

44- Planetarium is an important building for space scientists

Because we can see images of stars, planets, constellation bodies and other objects in the space

## What happens to/if?

1- The state of water when it is subjected to extreme cold weather.

It will be changed into solid state (ice)

2- Fresh water of a river when it meets the salt water of a sea.

An estuary is Formed.

3- Plants cannot get carbon dioxide gas from the air.

They will not make their own food through the photosynthesis process.

4- Animals that live in lakes if they dry up.

They have to adapt, or they will die.

5- People do not conserve fresh water.

The amount of fresh water will decrease.

6- Water is collected in low lying areas.

A lake is formed.

7- The quality of fresh water becomes poor.

Many living organisms will die or become extinct





8- The rate of rainfall increases on a river.
The level of water increases, and floods occur.

9- You mix clear water with a small amount of mud.
It will become dirty water.

10- If a trash dump is established near a tributary that is connected with a river
The litter of the trash dump will be blown into water of tributary then into river causing water pollution

11- The distance between the moon and Earth increases to twice
The gravitational force will be smaller.

12- The mass of the moon decreases to half.
The gravity will decrease.

13- The mass of the moon becomes twice its real mass
The gravity increases so the moon comes closer to Earth and it might crash into Earth

14- The gravity of Earth is a repulsion force not attraction force
All objects wil move upward a way from the Earth's surface

15- There is no gravity on Earth.
All objects will float off into space.

16- Planets if the gravity of the sun disappears.
They will leave their orbits and float off into space

17- The speed of skydiver if he opens his parachutes during landing
The speed decreases gradually





18- The gravity pulling force between two bodies when their masses decreases
The gravity will decrease.

19- A metal ball and a feather are fallen down from a tower.
The metal ball will reach the ground first.

20- You throw two iron balls have the same mass from the same height
They will reach the ground at the same time.

21- There is no air resistance and two objects with different masses are thrown from the same height
They will reach the ground at the same time.

22- Earth does not rotate on its axis.
Day and night will not occur

23- Half of Earth faces the sun.
This half has day.

24- Earth completes its spinning on its axis in 12 hours only.
Day and night occur in 12 hours

25- The length of the shadow of an object at noon
It will be the shortest shadow of the object

26- The shadow of an object if the sun locates at east or west in the sky.
The shadow of the object will be the longest

27- Stars are not made up of hot gases
Stars cannot make their own light

28- Sunlight falls on the moon's surface
The moon seems bright







29- The gravity of the sun if its mass decreases than it is now
The gravity of the sun will decrease

30- Half of the moon faces the sun
This half will appear bright

31- If the moon completes one revolution around the Earth
The phases of the moon are formed

32- If two planets have the same size make one cycle on their axis at the same speed
The day and night of both will be the same

33- If the Earth axis is not tilted
Sunrise and sunset will be similar each day on Earth





